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THE METAPHYSICAL IMPLICATIONS OF THE PRINCIPLE OF RELATIVITY.

THE Principle of Relativity is a mathematical principle by which spatial and temporal measurements are coördinated for observers in systems of reference which are in movement relatively to one another, and by which the equations are transformed when the observer passes from one system to another. Before we can understand the principle it is essential to understand the problem.

Let us suppose that while we are seated in a room some genie, like the genie of the lamp in the story of Aladdin, were to transport the room at a high velocity to some other part of the world, are there any means by which, limited to inside observation, we could know that the room was moving and could calculate the velocity and direction of the movement? Or, let us suppose that it is not the room by itself, but the whole solar system which has suddenly started a movement through space at an enormous velocity, impelled, we may imagine, by the kick of some Micromegas at play in the universe. Were there no astronomers or other folk observing the stars, is there any purely terrestrial phenomenon, anything which would necessarily undergo alteration on the earth itself, by observing which we could know that we were being translated in a definite direction at a definite speed? Until a few years ago when the important experiment which I am going to speak of was made, it was thought that optical phenomena observed under laboratory conditions would reveal such a movement of a system, could even reveal its

direction and velocity, without any need to resort to observations of objects outside the system. The ground of this belief was the theory that light was transmitted in a medium at rest, that is, a medium not participating in any movement whatever of material systems. The medium was named ether, and it was distinguished as that which could not move from matter which could move. The difficulty of testing this belief was the practical one that, as the transmission of light in ether is at an enormous velocity when compared with any material movement known to us, the variation of this velocity due to a material movement must be too small to detect. Were, however, our system to receive an impulse such as I have supposed, giving it (relatively, say, to the 'fixed stars'), a velocity at all approaching the velocity of light, the change such movement would produce ought to be so great that it should be easily observable. Whether the ether is an actually existent entity is unimportant. What is important in the theory is that the ether is at rest while the material system moves. Let us imagine then that we are seated in a laboratory furnished with accurate optical instruments. We have the means of producing a beam of light, throwing it on a mirror placed in any direction we wish, and receiving it reflected back to us. And now our room begins to move. Let us suppose the velocity of the movement is half the velocity of light, then as we move and the light is propagated in a medium which does not move the beam we throw out at right angles to our direction will lag behind us. If we send two beams one in each of the two directions at right angles at the same instant, they will not be reflected back at right angles.

This was the supposition before the famous Michelson and Morley experiment. It was to test this theory that the experiment was designed. The difficulty was to find a movement with a velocity great enough to show the aberration, and an instrument delicate enough to record it. The experimenters used the earth's movement of translation in its orbit round the sun combined with the movement of the solar system through space, and so obtained a movement of translation for their experiment, which, though only 1/10,000 part the velocity of light, was

yet a far higher velocity than that of any material movement we can produce. The instrument was contrived to show a variation in the velocity of light, as small as the 100 millionth, and this was at least one hundred times smaller than the variation they expected to find.

The experiment was such as I have already imagined in my fanciful illustration. The mirrors were placed in the two directions, parallel and perpendicular to the motion, and the whole could be rotated so that the positions of the mirrors could be reversed. A beam of light was arranged to pass from a source to each mirror whence it was immediately reflected to an observer and the expected shift of interference-fringes on rotating the apparatus was exactly calculated. But the result thus calculated was negative. No shift of fringes was observed, and if any existed it must have been at least two hundred times smaller than it ought to have been, and no reason was given to suppose that an effect even so small as this existed. Other experiments have since been made and all confirm the result, which is described as uniformly, even obstinately, negative.

Two important facts seem to be established by these experiments. The first is that it is impossible to discover the uniform movement of a system by optical experiments within the system. For example, to discover that the earth is moving without observing the sun and stars. And the second is that the velocity of light is constant for every observer, it is independent of the movement of the source of light.

These are the two experimental facts on which the theory of Relativity is founded. Before I try to show the revolution it has brought about in our ordinary notions of the nature of space and time, and in the concept of physical reality, let me give one more illustration drawn from fancy to show the difficulty there might be in discovering the alterations of the spatial and temporal proportions of our universe, should we find in the theory of relativity a reason to believe that space and time vary when moving systems undergo acceleration.

Suppose that Gulliver when shipwrecked on Lilliput, instead of waking up in his old proportions, had undergone during his

sleep a shrinkage to Lilliputian proportions, he would not have been able to discover that anything unusual had happened to him. It would have been impossible for him to know either that he himself or that the physical world had undergone a change. Yet he would have passed into a world in which all reality, spatial and temporal, with all the standards of measurement and all the clocks, had shrunk to one-twelfth of the proportions of the world in which till then he had been living. Compared with the former world feet would now be inches, and an hour would be five minutes. But as he himself would have shrunk to one-twelfth of his physical proportions he would be, and would continue to be, unconscious of any change of condition in his world. Physical reality would have suffered a complete snap, but psychical experience would have been continuous. Suppose that after a stay of one year, reckoned by his former system, twelve Lilliputian years, he were to return to his former world, and on returning were to be restored to his old proportions. He would still as before be unaware, and unable to be aware, of the new change in his spatial and temporal universe. But revisiting his family and friends, he would discover a strange discrepancy. He would have been absent one year, but would have aged twelve years, and his old world would be eleven years younger than he would expect to find it, for he would have been twelve years in Lilliput. If therefore a great change were to take place in physical reality, altering spatial proportions, altering temporal rate of flow, deforming the material universe, so long as we the observers continued ourselves to undergo the corresponding change we could not discover the fact. However great the alteration the world would remain for us the same world. And there is only one way in which in such case we could become aware of the change, and that is that we should be able to compare our experience with that of an observer who would not like us have undergone the change, but would have remained in the system we had departed from and returned to. Suppose now we ask ourselves what is the relation of Lilliputian space to our space and of Lilliputian time to our time? It is clear that we can give no answer, or rather that the only answer we can give

is that on the objective side there is no relation. They are not reconcilable with our ordinary notions of the conditions of the physical world. The Lilliputian space is not contained within our twelve times greater space, the Lilliputian time is not part of our twelve times slower time. If it were there would be a remainder, and there is no remainder. There is a one to one relation between them, but only for an observer who is able to pass out of the one system of reference into the other without himself changing with the change. Observe that in this illustration I am not supposing, as in Swift's satire, that these lands with inhabitants whose proportions are different from ours occupy some region of our own earth, and that their history is contemporaneous with ours. I am supposing that their space and time are actually different from ours.

According to the Principle of Relativity a change of the kind I have imagined is taking place at every moment. Space and time and matter do not exist independently of the movements which are taking place. The earth's rotation on its axis, and its annual motion, and the acceleration of the earth's movement in its annual revolution round the sun, involve a change in spatial and temporal proportions, a change which we cannot observe because we ourselves undergo the corresponding change in our proportions. We are in fact continually passing and repassing from Lilliput to Brobdingnag, and the truly extraordinary thing is that we should be able to discover it. It is a discovery of this kind to which the experiments have led, and upon this discovery the theory of Relativity is based.

Let us, then, examine some of the consequences which the acceptance of the theory of Relativity involves. I will take first the doctrine known as that of the abolition of the ether. The postulation of ether as the medium filling interstellar space was a necessary consequence of the undulatory theory. The notion of undulation or vibration involves as part of itself the notion of a medium which undulates or vibrates. There cannot be wave motion with nothing to support it. This necessity rests on the rejection by physics, as a fundamental axiom of the science, of the possibility of immediate action at a distance.

Electric and magnetic actions therefore can only be transmitted from point to point through space by the interposition of a medium. There was no such medium known or that it was found possible to make evident to sense perception. Ether had therefore to be hypothetically assumed. The argument still holds good, and physicists will no doubt continue to speak of ether in connection with undulation of light even when they are driven to deny to it every quality consistent with existence. The argument may be simply illustrated. It takes eight minutes for the light emitted by the sun to reach the earth—where is it during those eight minutes if there be no medium to transport it? And the negative argument based on the absence of any positive quality whatever that can reveal it is met by the familiar fact that the existence of air would be unknown had we no air pump. The ether pump may be awaiting discovery. Sir Oliver Lodge, who continues to support the ether hypothesis, meets the negative argument by pointing to the impossibility of conceiving that deep-sea creatures, however advanced in intelligence, could be aware of water. The notion of a luminiferous ether has had a strange and eventful history. At first a mere hypothetical x, it soon became a physical reality constituted with regular attributes and calculable in its action, finally supposed to be the primordial substance of the universe out of which matter itself has been generated. It was endowed with strangely contradictory attributes—frictionless, solid, incompressible, immovable, fixed and yet strainable, enduring unaffected the translation through it of matter. Not that there is anything necessarily fatal to it in the fact that its attributes seem self-contradictory; the reconciliation may merely await fuller knowledge. The theory of atoms has survived and developed, although serious logical difficulties in the conception of the atom were obvious from the first. And, indeed, we are not free from logical contradictions in any case, whether we hold that ultimate physical reality is continuous or whether we hold that energy and even time itself is atomic. The Principle of Relativity has deprived this hypothetical ether of every property but one, the absolute constancy of light propagation. But as

this absolute constancy is for every observer, whatever his own system of relative movement, instead of one absolute ether filling space, at rest and unalterable in relation to all systems of movement whatever, we must conceive the ether to be carried with and belong to every system of movement. Instead of one ether we must suppose infinite ethers, as many as there are systems of movement, and one for every acceleration of a movement, and to suppose this is precisely the same thing as to suppose there is no ether. Or we may state the argument against the ether hypothesis in another way. If light move at a constant velocity in an absolute ether, then to an observer in movement of translation relative to the ether, the velocity of light must appear greater or less by the amount of the observer's own velocity according to its direction. This expectation experiment has falsified. The velocity is constant, therefore the ether is of no use and may be abolished.

It follows also from the Principle of Relativity that neither space nor time is absolute, each is a function of the observer's system of reference. One and the same event which for observers in one system of reference is at one moment and in one point, is for observers in another system of reference two events separated by distance in space and interval in time. The familiar and simple illustration is that of objects dropped through the floor of a moving wagon. Two objects dropped in immediate succession is an event that to observers in the wagon occurs in one place and at one time. To observers on the soil they are two events separated in space by the distance travelled by the wagon during the time of their occurrence. For observers on the soil, for whom there is separation in space, there is also a time interval which does not exist for observers in the wagon. There are no two events separated to our observation in space for which it is not possible to conceive a system of movement of translation for observers in which they would be in the same place, and likewise there is no one event which for us is in one place and which might not for some system of reference be two events at different places. It was at first thought that at least time must be absolute, but it is clear that by the principle the time interval

is different for different observers; it must be shorter for observers to whom events occur in one place than for all other observers of those same events. Space and time therefore change and undergo alteration when we pass from one system of reference to another. One thing alone remains constant, the velocity of light. This velocity therefore assumes of necessity a rôle of the first importance in the new kinematic theory.

This new conception of the velocity of light as a finite critical velocity is also paradoxical when judged by ordinary notions. The velocity of light must be conceived as a constant finite velocity and also as a maximum velocity. And the Principle of Relativity introduces a new meaning into the conception of simultaneity. Two events can only be simultaneous if they are in the same universe, and they are only in the same universe if the distance which divides them in space and the interval which separates them in time are coördinated with the velocity of light.

The Principle of Relativity therefore regards every observer as the centre of a universe in which all events are coördinated for his system of reference by four coördinates, three for space and one for time, all variable. They undergo alteration with every change from one system to another, and with every change of acceleration of a system, and the only constant is the velocity of light. Let us illustrate it by an extreme case. Let us suppose that, from being an observer fixed to this system of reference we call our earth, one could be transferred to a system, say an atom, in which life as compared with our present life would pass in some thousand millionth of a second. Suppose now that from our new position on an electron we look out on to our new atomic system in place of our old solar system. One thing only will have remained constant, the velocity of light. Suppose then that our new system of reference is such that the light radiating from the centre of the atom takes eight minutes to reach our electron; then 90,000,000 miles will separate us from the source of light in space. The relation between this new space and time of the atom and the old space and time of the solar system will have nothing in it that is absolute, each is a function of the relative velocity of the observer's system. Each

observer will have eight minutes of time interval and 90,000,000 miles separating his light from its source, but there will be no standard for comparison of the space and time, the one will not be contained within the other. Five minutes of our old system may be a geological period of our new system. Einstein has calculated, for example, that were we to leave the earth in a system of translation moving at 1/20,000 of the velocity of light and were to remain absent two years and then return we should come back to a world that had aged 200 years in our absence.

The theory has also led to profound alterations in the concepts of inertia and of mass as they figured in the old rational mechanics. These concepts undergo an entire transformation in the new kinematics. In the ordinary popular notion mass is quantity of matter. In the new theory, the inertia of a body is seen to depend upon the energy contained in it, and this implies a fundamental identity of mass and of energy. From this it can be shown that radiation must have a 'mass' and that mass is a function of velocity. Many controversial and unsettled problems arise however at this point with which it is not my purpose to deal. But it is easy to see that the discovery which has led to the formulation of this new principle must, if it is established, bring about a profound change in our ordinary notions of the nature of the physical universe. What is its significance? To mathematicians it is a very simple matter. It merely changes one postulate for another and works out a new set of equations on the new postulate. To physicists it represents a complete alteration in their conceptual framework of the universe. What are its relations to philosophy? Are there any metaphysical consequences implied in the new conceptions? I think there are, and I will now try to indicate them.

From the standpoint of mathematics and of physics it may easily seem that philosophy has no concern with the matter whatever. The principle is founded, it will be said, in scientific experiment and depends from first to last on scientific facts. Philosophy cannot decide for the physicist whether there can be a movement which exceeds the velocity of light; whether, for example, gravitation is or is not such a movement, whether or

not ether is an actual physical existence; whether, if it be, there can or cannot exist the means of making it manifest; whether it is necessary to suppose a real ether as the condition of the formation of an electro-magnetic field; whether energy is discrete or continuous. These are not metaphysical problems and metaphysics possesses no special means of solving them. On the other hand it is not difficult to show that the ether hypothesis is more than a scientific theory. It is a philosophy. It arose out of the logical necessity of representing the continuity of the universe. It is an attempt to represent that continuity in physical terms and on a physical principle. The failure of the hypothesis cannot be without relation to the main problem of philosophy.

The problem of continuity may be said to be the main problem of philosophy. What is the kind of reality which makes the universe one? Is it the kind we attribute to a thing or the kind we attribute to a mind? Are matter and energy the origin of the activity we experience in life and consciousness, and observe in external nature? And is some mode of matter and energy primordial? Or, is mind original and are matter and energy derived? To this problem the fate of the ether hypothesis is not indifferent, whereas the ground of its rejection, and the necessary choice of a new principle consequent upon its rejection, directly challenge metaphysical enquiry. In the most literal sense the principle of relativity leads beyond physics.

An ultimate discontinuity is unthinkable. This may be illustrated in many ways. The simplest is, perhaps, to show the vanity of the attempt to represent pure nothing in thought. Absolute nought is a pseudo-idea. It is the abstraction by thought of every order of reality. Could such abstraction be completely successful it would end, not in an idea of nothing, but in no idea at all. When we speak of nothing we find always that what we are thinking of is something, and it is the absence of this something which we try to represent in idea, but the something is always present in idea, even when we imagine it absent in fact, and we are always ourself there in thought contemplating the void we imagine. Even the conception of an

ultimate discrete reality, atoms and the void, is not the idea of an absolute discontinuity. The void is the potential place of an atom. It is therefore not nothing. Continuity seems to depend on a physical principle. It appears absurd to suppose that the universe can hold together unless there is some entity, comprehensible by physical science, supporting the influences which radiate from part to part. If the continuity cannot be matter we must suppose ether, if it cannot be ether we must suppose at least geometrical space. The Principle of Relativity, whether its formulation is final or an approximation only, is based on the impossibility of regarding any physical entity, actual or hypothetical, as necessarily continuous. Continuity is not dependent upon an entity independent of the observer. It is the observer himself.

We ordinarily distinguish two kinds of continuity, namely, physical continuity and psychical continuity. The distinction is familiar enough, since it enters into all discussions concerning what constitutes personal identity. The scientific basis of continuity is illustrated in this doctrine of ether, for it was out of the necessity of finding such a basis that the doctrine arose. Were there any completely empty spaces, that is voids, in the physical universe, radiation would be inconceivable. There must be, therefore, in order that radiation may be conceived, a medium filling space. Matter cannot be that medium, for however tenuous we may imagine its form, yet its essential character is its mobility. Ether is conceived as a medium which is immobile. It may be strained but cannot be moved. There are no interstices in it. The contradictions, logical, physical and mathematical which the notion contains have always tended to leave its real existence in doubt; but even when its creators have been doubtful of its existence they have never been in doubt of the existence of a physically real space which would be empty if there were no medium filling it. Space in fact is itself often conceived as an entity in physics. Many now suppose that ether is unnecessary and that all that is wanted for the conceivability of radiation is the formation in empty space of the electro-magnetic field. But some kind of entity which will

enable us to form an idea of continuity seems essential to the conception of the physical universe. And this entity, whatever it be, ether or empty space, is immobile and unchanging.

The notion of psychical continuity presents a complete contrast to the notion of physical continuity. Instead of an entity required to be immobile and unchanging, it is change itself which is continuous. A psychical continuity is an identity which is preserved throughout a becoming which is absolute. This is true duration. This is, of course, the well-known theory of Bergson. Duration is not a succession of states that exist separately as states. It is neither temporal nor spatial in the sense in which space and time are modes of the external relations of a thing. Duration is essentially indivisible, and therefore not quantitative. It is quality, not quantity. If we think of life or consciousness as true duration, the parts of it are not spatially or temporally distinct within it but interpenetrate it. It is not therefore this kind of continuity that physics studies. If then we are forced by the Principle of Relativity to recognize that no kind of physical continuity can be ultimate, must we not seek this continuity, which is a necessity of thought, in mind? Is there any other way of interpreting the experimental conclusion that the velocity of light is constant for observers in different systems of reference? That ultimate continuity is psychical seems to me clearly and necessarily implied in the negative conclusion on which the Principle of Relativity is founded.

When we turn from the relativist doctrine of the abolition of the ether and consider the relativist theory of space and time, it is even more evident that ultimate continuity must be life and not something which lives. Whatever may be our view of the ether hypothesis, the conceptions of space and time cannot be indifferent to philosophy. The nature and origin of these conceptions are recognized problems of psychology and of metaphysics, and the consideration of them has given rise to many different theories.

In mathematics space is taken as constant and time as independent variable. In geometry space alone is considered. In chemistry space and time are both constant. In mechanics

space and time are both constant and are represented as the homogeneous background of movements and events. In the theory of relativity both space and time are variable. The three dimensions of space and the one dimension of time are four axes by which every event is coördinated with other events in a universe which is conceived as consisting of events. The coördinates are not absolute and independent, but tied to the event, relative to the observer and varying as his system of reference varies. Thus, for example, the acceleration which brings about a contraction of one axis of an observer's system relative to another system shortens the scales in proportion to the lengths measurable, alters the clock with the rate of flow of the system, so that continuity is maintained for the observer who has changed his system of reference.

The relativity of space and time is not a new doctrine. Indeed, when we consider the psychological origin of the conceptions of space and time, their relativity seems the natural conclusion to which the facts point. What is new in the relativist doctrine is the denial that there is any absolute space and time which can be taken as a standard of reference in physics, a standard by which all observed spatial and temporal relations can be regulated. It seems easier to admit this doctrine in regard to space than it is in regard to time. There are many considerations which seem to make it at least extraordinarily difficult to recognize an absolute space if such does exist. But with time it is different. Time seems to have something necessarily absolute about it. The moving point which divides our past from our future and which we call 'now', seems in its nature absolute. It must, we think, be one and the same for every system of reference whatever other relations systems may have. This 'now' seems to mark an absolute limit, in the sense that every event is in a time order of before and after in relation to it. This is one reason why time appears to have an absolute character which does not necessarily belong to space. There is yet another reason, namely, that time considered as a dimension, unlike the three dimensions of space, has an irreversible direction. On this irreversible direction depends the relation of cause and effect,

and it seems therefore that were time not absolute we could not assert the priority of the cause to the effect. Were the direction supposed reversible there would be systems for which effects would precede causes. This is the reason which Einstein gives for holding that a velocity exceeding the velocity of light is impossible. To the observer in a system moving relatively to other systems with a velocity exceeding that of light, effects would happen before their causes, and consequently the observer would be regressing in time.

The theory of the relativity of space and time, though often advanced in philosophy, has always appeared inconsistent with physical science. What is new therefore is its promulgation as a principle of physics and its recognition in the formulation of new mathematical equations. It is, however, just this physical form of the doctrine which is in accord with the philosophical distinction I have already noticed between duration and time. Duration is not a dimension, it is not in itself either a relation of measurement or an aggregate of units, or divisible into separate parts. It is simple and indivisible. Duration is not time, intervals of time are not intervals of duration. Quantitative distinctions are external to duration, brought about by viewing it against an intellectual background or scheme. Have we not in this doctrine the exact counterpart of the physical theory of relativity? What is ultimate is the change or becoming which constitutes the duration of the observer. What are variable are the axes of coördination, space and time, by which the observer unifies his external observation for his system of reference. What is constant is a relation of these axes of coördination. It is this constant relation for the observer which makes the phenomena of the external universe identical, however much, looked at from an independent standpoint, the system of reference may change. Is not this in effect to admit that the continuity of the universe is psychical?

It seems a great paradox to ordinary common sense to affirm, not merely that our experience of space and time is relative to ourselves, to our interests, to our attention, or to our mode of sense-apprehension, visual, tactual, auditory or muscular, but

that there is no absolute, physically real, space or time which our senses more or less adequately apprehend. Yet the argument is based not on psychological and metaphysical grounds but on mathematical and physical grounds. The relativity of space and time is a logical not a psychological postulate. But when we turn to the new theory of inertia, which depends on the doctrine that mass is a function of velocity, we seem to come up against a plain and glaring contradiction. The theory seems opposed alike to ordinary experience, and to intelligible scientific theory. "It is to the self-induction of convection currents, produced by the movements of its electrons, that the atom, which is formed of them, owes its apparent inertia and what we call its mass."[1] That an immaterial particle should possess mass seems contrary to our habits of thought, and is difficult if not impossible even to represent in thought. Mass and matter we commonly regard as one and the same thing. We ordinarily think of mass as quantity of matter. Even when we recognize that weight is a relation of masses and that the weight of any mass tends to zero as it is removed from other masses, while the mass which thus loses weight yet itself remains constant, it still seems a necessity of thought to accord to mass priority over movement. We have, therefore, in the electromagnetic theory of the origin of matter the assertion of a reality more fundamental than material reality. Is not this in full accord with the philosophical doctrine that movement is original and that things are derived from movement? "There are changes, but there are not things which change: change does not need a support. There are movements, but there are not necessarily constant objects which are moved; movement does not imply something that is movable."[2] The ground of this principle of original movement is that there is no way of deriving movement from immobility, because movement is more than immobility and the more cannot be derived from the less, but from movement we can derive immobility. Given original things, be they material atoms or the immutable Form or Essence of the Platonic Ideas, movement is something added

[1] Poincaré, *Dernières Pensées*, p. 201.

[2] Bergson, *La perception du changement.*

to them from without, or else it is not part of their reality but only an appearance. On the other hand, given original movement, things are derived by simple interruption, they are arrests or stops of a movement.

If, then, there be original movement where are we to look for it, and how are we to know that it is original? Clearly there is only one reality that can be original movement if we accept the Principle of Relativity. It can only be the reality we know in life and consciousness. Physical science offers us no standard of reference which is absolute, no unit of extension, no unit rate of time flow. The axes by which the universe is coördinated for each observer take the observer as their center and vary as his system of reference varies. This system of reference is to other systems a movement of relative translation. What then is there that is not relative in this universe of relations? Can there be any other answer than that it is the duration of the universe? And then what meaning can we give to this duration but that the universe lives, that is, that it is conscious in the widest sense of the term consciousness? The universe may not be conscious in the narrow sense of awareness or of individual self-consciousness. Whether it is or not is something which by the nature of the case we cannot possibly know. But that it is conscious in the sense that it endures as a living creature endures, by carrying along its past in its present activity; that it must be conceived as a living thing and not as the inert thing we call matter; this seems to be the plain deduction from the nature of knowledge and experience. There must be something absolute, and if the theory of relativity is true this is not space and time, nor any physically real entity fixed in relation to them. If continuity is not to be found in a physical principle it must lie in a spiritual principle. The Principle of Relativity therefore has an important metaphysical implication.

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THE TIME-PROCESS AND THE VALUE OF HUMAN LIFE. II.

IN our first article we considered the way in which men's estimate of the values that are realized in a human life is affected by the temporal position of the various realizations. We commonly estimate the worth of life in terms of the four values—moral, intellectual, æsthetic, and affective.[1] These four, we found, differ in the extent to which they can be separated from the life of the individual and considered by themselves: the intellectual and æsthetic values are more impersonal, and thus more readily detached, than are the moral and affective. That aspect in which they are most completely fused with the personality is revealed in intellectual and æsthetic activity, as distinguished from its products. And if we take this activity in the broadest sense, as including such mental alertness and sensitiveness as may characterize even persons of ordinary ability, we have these two more impersonal values in a form in which we can compare them fairly well with the more personal ones, goodness and pleasure.

Now we found that when men try to estimate the value of a particular human life, the question of the temporal relations plays an important rôle. The worth of an individual life, apparently, does not depend simply upon the degree in which any or all of these four values are realized in it: their presence in its later stages counts for more than their presence in the earlier ones. If a given value is to be more completely realized in one part of the life than in another, we regard it as desirable

[1] Whether religious value, as distinct from moral, should be added to this list is a question upon which we did not enter. For the purposes of our discussion it seemed permissible to leave it undecided, for the reason that even if the religious value is quite distinct, it stands in precisely the same relation to our problem as does the moral value, so that no new point of view would be gained by considering it separately. Throughout the discussion, moreover, the term 'moral value' has been used to designate inner attainment, the worth of the personality, rather than outward act.

that the fuller realization should be in the latter part. Simply to say, however, that the quality of the later stages is, somehow, more important than that of the earlier does not characterize adequately the peculiar relation that we suppose to exist. For many of our evaluations of life apparently imply the belief that the quality of the later stages is not merely more important, but of supreme importance, so that the quality of the earlier stages seems to have been wiped out by that of subsequent ones. Later happiness atones for earlier unhappiness (makes it as if it had not been), later goodness for earlier moral defect, later intellectual or æsthetic activity for an earlier want of it. But earlier joy does not atone in like manner for the later sorrow, nor earlier goodness for the later moral downfall, nor an earlier high level of thought and æsthetic sensibility for the later low level. The value of the later stages seems to cancel or destroy that of the earlier, but not to be in turn canceled by it. Thus the later stages seem to stand for the earlier in a way in which the earlier cannot stand for the later.[1]

Now we saw that the extent to which a value is affected by these temporal relations appears to depend upon the degree of its fusion with the personality. Truth and beauty, considered quite in themselves, are above the vicissitudes of time and change. And even as the products of human activity, they are, regarded from one point of view, equally secure. The greatness of a scientific or artistic achievement cannot be destroyed by any later failure on the part of its author. But our estimate of the intellectual or æsthetic worth of the man, as distinguished from that of the particular achievement, is more or less affected by his subsequent failure. It is not then value as such that is influenced by temporal relations, but value as an integral part of human personality. And the reason why our estimate of hedonic and moral value seems to be more readily affected by temporal considerations is that these two ordinarily fuse with the personality more completely than intellectual and æsthetic value do.

[1] As a matter of convenience I shall regard the phrase 'supreme importance' as indicating this compensatory function that the later stages seem to have.

The outcome of our first article then may be expressed by saying that human beings show a marked tendency to believe that so far as the value of the individual life is concerned, its later stages are of supreme importance.[1] Later excellence, men seem to think, makes up for earlier defect, makes it as if it had not been; and in similar fashion later evil swallows up, destroys, earlier good. The task of the present paper is to try to determine the connection between this belief and the problem of the relation of the individual life to the time-process. My purpose is primarily neither to defend the belief nor to offer arguments in support of any particular theory of the time-process, but rather to ask what conception of the relation of the individual life to the temporal process is logically implied in the belief.

Some might feel inclined to dispose of our task at once by the simple method of condemning the belief outright. Men seem, they might tell us, to regard the later stages of life as supreme in importance, but this opinion, however cherished, is quite mistaken. If pleasure, and goodness, and intellectual and æsthetic activity have any value, they have as much at one time as at another. The belief to the contrary is simply one of the many errors to which popular opinion is liable. It seems to me, however, that we are scarcely justified in throwing aside the belief in this summary fashion. And in point of fact I think that few philosophers are willing to reject it altogether. Many whose theory of the nature of time seems incompatible with it try, none the less, to find some place for it in their account of reality. And since this is the case, it may be worth our while to inquire somewhat carefully into the relation between the belief and the various ways in which the temporal aspect of human life may be conceived. I proceed at once then to ask how we must regard the temporal character of the individual human life in order that our conception may be consistent with the belief in the supreme importance of the later stages.

The first thing to be said is that we must regard the time-

[1] In this paper, as in the preceding one, we shall limit our consideration to the life of the human individual. To ask as to the value of the life of the race, taken as a whole, would be to raise questions which are of much interest and importance, but which lie beyond the scope of this discussion.

process as having at least a certain degree of reality. For if time is utterly unreal, it cannot matter whether the so-called 'earlier' or 'later' stages of a human life contain more of happiness; and it must be equally indifferent which stages reveal the greater moral, intellectual, and æsthetic attainment. If our time-consciousness is altogether illusory, the distinction of earlier and later is void of real significance. All that we can admit is a whole whose parts exhibit various degrees of good and bad.[1] The order in which these degrees appear to us to be arranged and the direction of this order—the irreversibility of the time-process—have no significance. And thus it must be a matter of indifference whether the more complete realization of value is in what we call the earlier or in what we call the later part.

The acceptance of our belief then would involve the assertion that the order and the irreversibility of the time-process are real. But this is not all: it would involve also, I maintain, the reality of change, of the time-flow, of the passage of earlier into later. For unless change is real, the value of the later stages cannot cancel that of the earlier. Our defence of this thesis will occupy the greater part of this paper. As a first step we must inquire in what sense we are to conceive change as real. As soon as one asserts the reality of change or of the time-process,[2] a question arises as to the nature of the past. To some it seems that a consistent believer in the reality of change must ruthlessly banish past events from the domain of the real.[3] But if we do this, have we a conception of the time-process that will justify our belief in the supreme importance of the later stages of life? At first glance it might seem that we have. As life goes on, one stage after another passes into non-

[1] I use the terms here in the broader sense in which 'good' includes all value, not merely moral value. The same usage appears occasionally in other parts of this paper, but I think that the meaning is clear in all cases.

[2] Throughout the rest of this paper I shall use the terms 'change' and 'time-process' indifferently to signify the concrete flow of events, the replacing of one (earlier) content by another (later). 'Time', if conceived as an empty form in which events are arranged, is at best real only in the degree in which any abstraction is real. Our concern here is simply to defend the reality of that aspect of life that we call change.

[3] *Cf.* Bradley, "How, if we seriously mean to take time as real, can the past be reality?" *Appearance and Reality* (1897), p. 208.

existence. At any moment then we can say that the happiness of the past, being dead and gone, can in no way compensate me for the fact that I am unhappy now, and similarly that the sorrow of the past cannot interfere with my present joy. But though the past has no power to alter the value of the present, the present seems in a certain sense able to affect that of the past. The present, since it alone is real, is all in all. Hence its happiness sweeps triumphantly away the griefs of an earlier time; or its misery settles like a pall over the fair face of bygone joys. In the insistent reality of the present it is as if the joy or the pain of the past had never been at all. And the same thing, *mutatis mutandis*, may be said of moral, intellectual, and æsthetic achievement. I am only that which I am now. If I am now sinful or intellectually slothful or insensible to beauty, the virtue, the mental activity, the æsthetic sensibility of my earlier life shall avail me nothing. But if I am now high-minded, mentally alert, or appreciative of beauty, the intellectual stagnation, the æsthetic insensibility, or the moral weakness of my past is wiped out by the attainment of this later period.

But although it may seem at first thought that this account of the matter makes room for the belief in the supreme importance of the later stages of life, a brief reflection will convince us that it does not. For what we have been saying goes to show merely that present is more important for us than past, not that present and future are more important than past, or future than past and present. In fact, the inference that this way of thinking most naturally suggests is that the present has a value far outweighing that of either past or future. Now it is doubtless true, as we pointed out in our first paper, that for the naïve consciousness the present has precisely this supreme value. But what we have maintained is that for the higher insight of the reflective consciousness the future, if we can in any way overcome the disadvantages arising from its uncertainty, has greater value than the present. It does not, of course, even to the most highly reflective consciousness, give so keen a sense of reality as the present; but it has greater weight in determining the worth of life. Or, to put the matter more accurately, in

our most serious estimation of this worth we make our distinction, not between present on the one hand and past and future on the other, but between the earlier and the later stages of a process, each moment of which is in turn future, present, and past.

It is clear then that we cannot justify the belief in the supreme importance of the later stages by appealing to the unique reality that the present moment has for us. Nay, more, if this unique reality should beguile us into supposing that only because of it has the present more importance than the past, we should be forced in the end to admit that the temporal position of the various realizations of value in an individual history is of no significance whatever. For we should have to say that any stage of the history, when present, is of more consequence than any of the others—past or future—but that its peculiar importance vanishes when it becomes part of the past. And since each stage in its turn is present, no stage would ultimately have more importance than any of the others. Thus, given so much of good in an individual life, it must be a matter of indifference in what part of it this good is contained.

It seems clear then that if we interpret change as meaning simply the emergence of a given content into the status of 'present' and its subsequent lapse into the status of 'past,' and if we suppose further that what is past is completely gone, we cannot justify the belief that we are considering: so far as the defence of the belief is concerned, we might quite as well declare change to be illusory. But is it not possible to assert the reality of change and at the same time to take a different position with regard to the past? May we not suppose that although the time-process is real, the earlier stages of a human life do not fade into utter non-existence when the later ones come into being? That in the history of the individual which *was* real is still real, let us say, in a highly significant sense. The life of the human being is a unity, not merely when you take it in cross-section, but also when you take it longitudinally. Each of its successive stages includes within itself all the preceding ones, and includes them in such fashion that they are at once preserved and transformed. Let us ask in what the preservation and the transformation must consist.

The most obvious sense in which an earlier stage may be said to live on in a later one is found in the case of memory. Almost every one would admit that what is remembered has not utterly ceased to be, and that thus in a certain sense it may be said that the earlier stages, in so far as they are recalled, live on in the later. But the appeal to the fact of memory is far from giving us a solution of our problem. For in the first place, if no more of my past is preserved for me than my memory can illuminate, it is probable that the larger part of it is gone forever. And in the second place, quite apart from this consideration, it is obvious that the mere fact of memory can furnish no justification of the belief in the supreme importance of the later stages. The fact that a man happens to remember his former intellectual or moral deficiencies in no way provides a rational basis for our belief that these deficiencies are atoned for by his later attainment. Nor are we any better off in the case of past affective states. On the contrary, in this case it even seems at first glance as if the assertion that memory gives existence to the past might furnish an argument against the belief in question rather than for it. The memory of former pain, one might urge, may mar a present joy, and the recollection of bygone happiness may soothe a present sorrow; but if this is so, the affective value of the earlier seems to cancel that of the later in much the same way in which we have said that the value of the later cancels that of the earlier. So it might seem at first thought; but second thought shows that this is not a true statement of the case. For the affective tone and the affective value of any memory belong to the moment of the remembering, not to the moment of the experience remembered.[1] It is obvious then that the fact of memory does not indicate that the value of the earlier can in any degree cancel that of the later. But it is equally obvious that it cannot justify our belief that the value of the later cancels that of the earlier.

[1] This is borne out by the reflection that "a sorrow's crown of sorrow" may consist in "remembering happier things," and that similarly the recollection of a past painful experience may serve to enhance a present joy. It is borne out also by the fact that a pseudo-memory—a supposed recollection of a pleasant or painful experience that never actually occurred—would have the same influence upon the affective tone of the present consciousness that a true memory would have.

There is, however, another sense in which we may say that an earlier stage lives on in later ones; namely, that it has helped to make these what they are, that they are bone of its bone and flesh of its flesh. In this second sense we may declare that a man's life is a whole in which each moment bodies forth all of it that has gone before. Through memory a part of what I have been lives on in me, but in the fact of which we are now speaking the past is preserved more completely and in a more significant sense. This second fact also would doubtless be admitted by most of those who say that the past is non-existent. Few, if any, of those who make this assertion mean it in the bald sense in which it is opposed to the recognition of any continuity of character and conduct.

But when we have said that an earlier stage continues to live in a later one in the sense that it has helped to give this later its character, we have not gone very far toward explaining the compensatory function of the later stages. For it is comparatively seldom that we can say that the later good exists because of the earlier evil or the later evil because of the earlier good.[1] In most cases it seems that we must rather say that the evil replaces the good and that the good replaces the evil; that the later good exists in spite of, not because of, the earlier evil, and similarly the later evil in spite of the earlier good. Now in such cases it does not seem possible to explain the compensatory function of the later by an appeal to the influence of the earlier. At the same time I believe it to be true that the later stage has its compensatory power because it is what the earlier has

[1] The instances that are most commonly given in support of the assertion that evil leads to good are the spiritual enrichment that sometimes seems to result from suffering and the strengthening of moral fiber that comes from the conflict with obstacles of various kinds. Much has been said of the ennobling effect of the conflict with pain and difficulty; and I am far from wishing to deny the deep truth involved in the contention, although it seems to me that in our emphasis upon it we sometimes overlook the fact that in a large number of instances the effect is apparently the reverse of ennobling. Be this as it may, the point that I wish to make is that when a man's nature is refined by suffering or strengthened by the struggle against heavy odds it is not quite accurate to say that good has come out of an earlier evil. For the increase in moral strength, *e. g.*, which shows itself at a later period, came not from the obstacle (the evil), but from the heroic battling against it; and this was not an evil, but a good.

come to be. What I have in mind is not, however, the influence of earlier upon later, but a different relation, which we must now try to describe.

If one were to assert the complete determination of the later by the earlier, this would amount to declaring that the earlier contains the later, wrapped up within itself. And thus we could say that the very first stage of an individual history is virtually the whole life. Everything is there, folded up in that earliest stage; and what we call the living is simply the unrolling of a scroll upon which all the characters are already inscribed. But instead of saying that the earlier thus contains the later, one might reverse the procedure and say that the later contains the earlier. In our ordinary conception of the individual human life, we think of its various stages as so many different parts of it. The whole life would thus be the sum total of these stages. But from the point of view that we wish now to suggest, the life is to be regarded as a unity in a sense that makes the whole something other than this. We can perhaps best express our meaning by saying that the final stage in the history of a human being—assuming for the nonce that there is a final stage—is not a part of that history, but the whole; that it gathers up into itself and keeps in existence the entire past, which but for its maintaining power would be dead and gone. It is only with reference to the future, never with reference to the past, that we could speak of the present moment in a life as one of its parts. My present is my whole life, so far as that life has yet been lived; it is a part only in the sense that it, in its turn, will be taken up and preserved in what we call a later stage. According to this way of regarding the matter, the earlier stage is one with the later, not merely in so far as it is preserved in memory, not merely by virtue of the subtle influence of past thoughts and deeds upon present character and conduct, but also because the later stage *is* the earlier, the earlier enlarged, enriched, transformed.

This way of looking at the matter emphasizes the unitary character of the individual life. But it should not be confused with the doctrine that the human life is essentially a timeless

unity, which is revealed in varying degrees of completeness in the different parts of the temporal process. When I say that each human life is a unitary whole, I do not mean to imply that the unity is something that is once for all there and that the various stages are so many different manifestations of it. I mean rather that it is a unity that has its very being in time. Each stage in its turn is in a sense the whole life; but each new stage is more truly, because more fully, the whole life than any of the preceding ones were.

Now if the life of the human being is a unity of this kind, it is clear that the temporal position of the various realizations of value in it is a matter of profound significance. A man's life is more nearly identical with certain of its stages than with others: every new stage is more truly the life than any of its predecessors have been. And if this is so, we can understand, at least in some measure, how it is that the value of the earlier may be canceled by that of the later. We said above that the inclusion of the earlier stages in the later, implied in our conception, involves not only their preservation but also their transformation. The transformation consists in the fact that the earlier has come to be the later. Whatever may be true of change in general, the change that characterizes the life of a human being is not a replacing of one content by another content, but the transformation of the one into the other. Now if the earlier is changed into the later, we can see how the value of the later may stand for that of the earlier, how later good can atone for an earlier evil and later evil can wipe out an earlier good.

But at this point we must pause to answer an objection that may arise in the minds of some of our readers. Granted that the greater importance of the later stages of life could be explained on the assumption that has been made, one may yet ask whether it could not be equally well explained by a simpler assumption. May it not be that the later stages are more important than the earlier simply because the quality of still later stages depends more upon them than upon their predecessors? In the life-series a, b, c, $\cdots$ n, the stage g is more

important than *b* because of the strong probability that *h*, *i*, *j*, ··· *n* will be like it rather than like *b*.

To this objection we can make two answers. In the first place, we can reply, men apparently feel that the quality of the later stages is more important than that of the earlier, even when that of still later ones is not in question. This is shown, I think, when we try to estimate the value of a life taken as a whole. When we survey a life that has been ended by death, we believe that the quality of its latter part is of the greatest importance. And while in many cases this feeling is probably in some measure due to the belief in immortality, I incline to think that it is equally strong in those who either reject the doctrine or are in doubt with regard to it. Of course it is open to any one to urge that even in these cases the feeling has its origin in the belief in a future life, and thus that those who reject the belief are yet unconsciously influenced by modes of thought that have their source and their sole justification in it. To discuss this assertion would take us too far afield; I can only say that personally I doubt its truth. Moreover, even if we should grant it with reference to the other values, it seems hardly possible that our estimates of the pleasure-pain value of the earthly life are thus influenced by a belief in immortality. The affective quality of a particular stage offers no guarantee of the quality of subsequent stages, whether in this life or in a life to come. Nevertheless men seem to feel that, judged from the point of view of pleasure and pain, a life is more desirable if the fuller realization of affective value is in the later rather than in the earlier part.

But it matters comparatively little whether or not this first answer to the objection that we are considering brings conviction. For the second, to which I now pass, seems conclusive. The objection proposes to substitute for our explanation one that has the advantage of being simpler. But unfortunately this substitute explains, not the fact that we are trying to account for, but a different one. At the very best our opponent has explained only the greater importance of the later stages; he has not explained their compensatory function, the power that

they seem to have to transform the values of the earlier stages. Even supposing that he has justified us in regarding the quality of the later stages as more important than that of the earlier, he has done nothing to validate our belief that later good makes up for earlier evil, and later evil spoils earlier good: he has not shown how it is possible that the quality of one stage should fix the value of the whole preceding life. For this compensatory function of the later stages the only explanation that we have yet found is that furnished by our conception of the individual human life as a whole that more and more comes to be.

Let us now gather up the threads of our discussion. We began by asking how we must conceive the relation of the individual life to the time-process in order to justify our belief in the supreme importance of its later stages. We showed in the first place that the order and the irreversibility of the time-process must be accepted as real. Next we made the assertion—to be defended later—that the reality of change must also be affirmed. At this point it seemed necessary to explain what we meant by asserting the reality of change, and in particular to define our position with reference to the problem of the existence or non-existence of past events. In considering this problem we limited ourselves to the life of the human individual. And the theory that we tried to develop is that the past of such a life is not altogether non-existent: it lives to some extent in memory; it lives still more completely in the influence of the earlier upon the later; it lives most truly of all in the sense that this later is what it has become and that thus it is held in solution, as it were, in this later.[1] And it is this third aspect of the continued existence

[1] If any one thinks that he finds in this conception some resemblance to a certain view of Bergson's I shall not try to dispute the point. I shall only say that if I have been influenced here by the doctrine of the French philosopher I have been influenced unconsciously, and that I have been led to my opinion by considerations quite other than those that seem to have moved him. Furthermore, the difference between my conception and his seems to me at least as great as the resemblance. I have tried to show that in the life of the human individual the earlier stages must in some way be preserved in the later, and that this preservation is something more than that which is afforded by memory or by the influence of the earlier stages upon those that follow them. Precisely what this 'more' is it is not indeed easy to say, and I must plead guilty to the charge of being rather vague upon this point. But I cannot see that we should gain anything by appealing to the con-

of the past that we must affirm in order to justify our belief in the compensatory function of the later stages of life. For only the evil that has become good is atoned for; and only the good that has become evil is spoiled.[1]

Our contention then is that in order to justify the belief in the compensatory function of the later stages of human life we must assume the reality of change as characterizing that life in the sense that we have just described. We must now ask what can be said in support of this contention. A part of our defence has already been offered in connection with the discussion of the nature of past events. We have shown, I think, that we cannot justify the belief in the supreme importance of the later stages if we assert the utter non-existence of the past, nor if we regard the past as existing simply through its being remembered and through its influence upon later stages. We have shown also that we cannot explain it by appealing to the fact that in general the later stage has more influence than its predecessors in determining the quality of still later ones. But one more point remains to consider before we can regard our defence as complete. It seems fairly evident that *if we assert the reality of change*, we can justify the belief in the supreme importance of the later stages only by supposing that the later include the earlier and thus in a sense keep them in existence.

ception of 'unconscious memory.' About all that we can say is that the preservation of the earlier stages is a corollary of the fact that there are beings whose nature is essentially temporal, whose wholeness is something that comes to be.

Aside from the fact that I do not follow Bergson in appealing to the conception of unconscious memory, there is the further difference that my theory involves not only the preservation of the earlier stages by the later, but also the fixing of their value. The conception that I am trying to develop is something other than the mere notion of cumulation. The preservation of the past, whether through unconscious memory or by other means, is only a part of the matter; the transmuting of the value of the past is of equal or greater importance.

[1] It might be urged that our solution of the problem consists simply in an appeal to the conceptions of growth and development. And in the sense in which these terms are ordinarily used they have no doubt much in common with the conception that I am trying to present. I have tried, however, to avoid them because it seems to me that both concepts are sorely in need of a clarifying analysis. As commonly employed they have various biological implications which such analysis should bring out. And though not identical in meaning, they are frequently used as if they had the same significance.

But we have not as yet shown that we cannot vindicate it equally well if we deny the reality of change altogether. And we can imagine some reader protesting, at this juncture, in the following fashion. If the later stage is more important because it is more nearly the whole life, is it not clear that our interest is not in change, but in wholeness? And if so, does it not seem that the way in which men evaluate life can be defended equally well upon the assumption that change is a guise that reality wears for us, but is not characteristic of its inner nature? What we call a difference in temporal position is ultimately only a difference in degree of completeness; and the so-called later stage is simply a larger part of the non-temporal whole.

To this objection I reply as follows. It is indeed true that our chief interest is not in the time-process merely as time-process; one of our main contentions has been that the later stages are more important simply because the life that fills them is more nearly complete.[1] But this does not require us to admit that change is illusory. Moreover, I think it can be shown that if one admits that change is illusory one cannot justify the belief in the compensatory function of the later stages, no matter how strenuously one may insist that wholeness, rather than change, is the thing of chief significance. We shall now try to show this.

Let us designate by *a* one of the so-called earlier stages of an individual life, by *b*, *c*, *etc.*, somewhat later stages, and by *n* the final stage, assuming for the sake of the argument that there is one. Now according to the view that we are criticizing, which regards the temporal process as illusory, *n*, which we call the final stage, is, properly speaking, simply our view of the whole life, *N*; *A*, the reality corresponding to our *a*, is a small part of *N*; *B* is a larger part, which includes *A* within itself; *C* is a still larger part, which includes *B*; and so on. The series *A*, *B*, $\cdots$ *N*, which is the real order corresponding to our time-series *a* $\cdots$ *n*, might thus be symbolized by a number of concentric circles, of

[1] In other words, our chief interest is not in change as such, but in change as the form of human life.

which A is the smallest and N the largest.[1] Now according to our opponent, man's belief that if n be good its character atones for that of a, which we will suppose to be evil, can be justified without our assuming the reality of change. If the whole, N,—represented to us in n, the final stage,—is good, it compensates for the fact that a certain part A,—represented to us by a, one of the early stages—is evil. The excellence of the whole atones for the evil of some of the parts. But it is precisely at this point that we must raise an objection. It is only if change be real that the excellence of the whole can atone in the slightest degree for the evil of the part. If change is real it is possible, we have urged, that the part—one of the earlier stages—may be transmuted in the whole, the final stage. But if change is unreal, how can this be? If A becomes N, it is conceivable that N might atone for A. But if change is unreal, A, B, C, $\cdots$ N are all equally existent, equally eternal. Now N, which by hypothesis is good, includes A, which is evil; but A does not in its turn include N. Hence for A there is eternally nothing but A. That is, there is no escape from misery or sin: a 'temporary' suffering or sin is really eternal. And if it be eternal its evil is not transmuted.

But, one may here interpose, does not our own experience present many cases in which the excellence of the whole cancels the evil of the part, and *vice versa* the evil of the whole the excellence of the part? In many a noble deed there is some slight admixture of unworthy motive; in many a glorious achievement of art there is some minor defect in conception or execution; and it is a commonplace of experience that

> "Our sincerest laughter
> With some pain is fraught."

Yet each of these wholes is 'good,' and its excellence seems to atone for the deficiency of some of its parts.

[1] The true nature of the relation of A, B, C, *etc.*, to one another and to N must be in great part unknown to us, since we view reality, not as it is in truth, but in its illusory temporal aspect. We must therefore emphasize the point that the series of concentric circles is merely a symbol of an order whose true nature we cannot describe. By hypothesis, however, the order A, B, C, *etc.*, is one of increasing completeness.

But, I ask, does it really atone? Is it not rather the case that if there be the least taint in the part, the whole falls short of perfection? It is true that we regard a slight defect as practically negligible. Because our experience seldom, if ever, shows us anything quite free from flaw, we accept with glad thankfulness that in which the good seems far to outweigh the evil, feeling that in the face of so much excellence it would be carping to allow our thought to dwell upon the defect. None the less, sober judgment must admit that the evil of the part is ignored rather than destroyed. Now what I am trying to bring out is the difference in this respect between an existing whole and a whole that comes to be. An existing whole cannot be completely good unless each of its simultaneously existing parts is good. But a whole that comes to be, might be completely good in spite of the fact that some of its (serial) parts were bad. It will always be true, if you like, that certain of the earlier stages *were* evil. But when they have grown into the final stage, they have *become* good.[1]

I repeat then that if the temporal process be unreal, I can see no way in which the evil of some parts can be in the least degree atoned for by the excellence of the whole. There are indeed many who would try to escape from this conclusion by declaring that evil is illusory, but this theory offers no safe refuge. The definitive answer to all attempts to deny the reality of evil has been made by Dr. McTaggart, for one, in his paper on "The Relation of Time and Eternity."[2] To the assertion that evil is mere illusion we must reply, he says, that in such case the (undeniable) existence of the erroneous belief in it would itself be an evil.[3]

It is equally futile to try to avoid the difficulty by saying that evil is merely incompleteness. Evil is absence of value, lack of that which ought to be. And if it is this, it is not mere incom-

[1] Another point that might be urged is that in a whole whose parts are co-existent with it we can ignore the evil of some parts only if this is slight in comparison with the excellence of the whole. But in a human life, taken as what I may call a serial whole, the case seems to be different. A considerable amount of pain or intellectual or moral defect in the earlier stages is atoned for if the later stages are good.

[2] *Mind*, N. S., Vol. XVIII, pp. 343 ff.

[3] *Op. cit.*, p. 360.

pleteness; it is something other than being a part instead of a whole.[1] But if by the identification of evil with incompleteness one means rather that the sense of evil arises from our taking a part as if it were the whole, from our viewing it in isolation from the whole to which it belongs, this is simply going back to the doctrine that evil is an illusion. And we can reply to it, after the fashion of Dr. McTaggart, by urging that the fact that men view the part in isolation from the whole is itself an evil—is something other than incompleteness, is that which ought not to be.

There is still one more way in which we might try to reconcile the belief in the compensatory power of the later stages of life with the doctrine of the unreality of change. The character of the human individual, it might be urged, is something fixed and definite, which stands as an unchanging reality back of the process of our life in time. This changeless character—the true self—is manifested in different degrees of adequacy in the various stages of the life, but more fully in the later stages than the earlier, while the final stage is virtually a complete manifestation. The quality of the later stages is the more important because these reveal more fully what the life essentially is. This hypothesis may be regarded as an application to the individual life of Dr. McTaggart's attempt to reconcile the two doctrines of the unreality of time and the reality of progress.[2] We can refute it by the help of considerations that we have already used in attacking a slightly different argument.[3] If the time-process is unreal, all the less and more adequate representations of the changeless reality exist eternally. And the existence of the more adequate can in no sense do away with that of the less

[1] This conclusion cannot be avoided, I think, unless we are prepared to say that the concept of value is merely a derivative from the concept of completeness. And this is by no means certain. Certainly the burden of proof rests with those who ask us to believe that value is such a derivative, and no satisfactory proof of this thesis, I think, has ever been given. It is one thing to declare that only the whole is altogether good and that thus any part must be in some degree evil—though even this proposition seems to some of us to lack adequate proof—and it is quite another thing to say that excellence is nothing but completeness and evil nothing but incompleteness.

[2] *Op. cit.*

[3] See above, p. 31.

adequate. If the time-process is real, such atonement for the earlier by the later—for the less adequate representations by the more adequate—is conceivable; but if it is unreal, the atonement is not conceivable.[1]

We have now considered the various ways known to us in which one might try to reconcile man's belief in the compensating power of the later stages of life with the doctrine of the unreality of change, and we have shown that each of these attempts must end in failure. We cannot as a result of our survey assert outright that the doctrine and the belief are incompatible; for perhaps one might attempt a reconciliation in some other way that has not occurred to us.[2] But I think that we are justified in saying that so far as we can at present see, man's belief in the supreme importance of the later stages can be defended only if we conceive the temporal character of human life in the way that we have suggested. As the matter stands at present, we must either adopt this conception or condemn as utterly mistaken our belief in the transforming power of the later stages. Now there can be little question that we feel it to be of vital importance that the fuller realizations of value shall appear in the later stages of a man's history. So long as a life falls short of complete attainment, we demand that at least it shall show

[1] The conclusion that is really indicated by Dr. McTaggart's argument is, to my mind, not that change is unreal, but that the universe, at present actually imperfect and in process of change, may eventually reach a state of perfection and that then change will cease. This is the only intelligible interpretation that I can give to the doctrine of the eventual passage of time into eternity. And it is, it seems to me, a theory that one might conceivably adopt, although personally I do not feel sure that perfection and change are incompatible. But although this seems to be the conclusion to which his argument points, it is evident that Dr. McTaggart would not be willing to accept it. For while apparently he would not object to the identification of eternity with changelessness, he is definitely committed to the doctrine of the unreality of change.

Professor Overstreet, in an article entitled "Change and the Changless" (this journal, Vol. XVIII, pp. 1 ff.), seeks to show, among other things, that a perfect being may undergo change. While there are some parts of his theory that I am unable to accept, it seems to me that on this particular point he has presented a forceful argument and that he has at least shown that the common belief in the incompatibility of change and perfection is open to question.

[2] It should be remembered also that we did not try to prove that value is something other than completeness but merely declared that the burden of proof rests with any one who may ask us to regard the two as identical.

progress—perhaps in happiness, certainly in intellectual power, in æsthetic sensibility, in moral attainment. And this conception of progress—important for all aspects of our nature—is so fundamental in our idea of the moral life that any theory of the time-process that robs it of its meaning fails to satisfy one of the most insistent demands of our being.

And with this I am content to leave the matter. I do not profess to have proved that my conception of the relation of the individual life to the time-process is correct. But it seems to me that I have shown that so far as we can at present see, we must either accept it or repudiate all those evaluations of life that give it its deepest significance for us.[1] Some there may be who will still maintain that the belief in the compensatory power of the later stages is a mistaken one. But when we consider how intimately it is related to our sense of the value of life we may well refuse to condemn it without strong reasons. That the majority of thinkers are loath to repudiate it is shown by the fact that many who assert the phenomenal character of the time-process still try to justify, by some means or other, the conception of progress.[2] With regard to this conception there are three questions that should be carefully distinguished. (1) Is progress possible? *I. e.*, is reality of such a character that either in the whole or in some part the later stages *might* contain fuller realizations of value than the earlier? (2) Is progress in this sense actual? (3) If progress is possible, is it significant, desirable, valuable? Is it any better than retrogression? Of course if a progressive series, taken as a whole, contains more good than a regressive one, we should unhesitatingly declare it to be better. But what our third question means to ask is whether, given a certain amount of good in the series as a whole, progress is any more to be desired than retrogression. It is this question with which I have been concerned in the present discussion. For the purposes of this study I do not care to

[1] I should not wish it to be thought that this is the only consideration that leads me to accept the essential reality of the time-process. But my concern in this discussion is not to examine the arguments for and against that doctrine.

[2] *E. g.*, Dr. McTaggart (*op. cit.*) and Professor Howison (*The Limits of Evolution*, 1904, pp. 373 ff.).

know whether progress is actual or not. What I have tried to show is that *as* progress it can have no value unless the later stages can compensate for the earlier as the earlier cannot for the later. *I. e.*, unless there is such one-sided compensation, it can make no difference—given a certain amount of value in the whole of a particular life—whether that life in its course progresses or retrogrades. And thus even if there were progress, it would be, *qua* progress, of no significance.

Now if one declares that change is phenomenal it is not easy to see how one can assert the possibility of progress at all. But even if we waived this difficulty and assumed that one might reconcile the two doctrines of the unreality of time and the possibility of progress, we should still be unable to see how the later stages of a life could in any way compensate for the earlier. And in this case, though we might be willing to grant that progress is possible in the life of an individual, we should have no ground for regarding it as significant, as any better than retrogression. If however we accept the reality of change and if further we conceive the temporal aspect of human life in the way that I have proposed, we have a theory that implies the desirability of progress and thus furnishes an adequate basis for our most fundamental judgments as to the value of life.

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ON RELATIONS.

PURE mathematics has often been defined as *the science of abstract relations*, that is, of relations abstracted from entities, from qualities and from quantities. If such it be there is a question whether it may consistently be termed a *science*. Science, however, is not only the analytical and comprehensive knowledge of entities existing in relations; it is also the theoretic statement of the *relations* in which and by which the entities exist. If the relations can be abstracted from their relata and treated abstractly, that is a *method* of science or of philosophy, or even an abstract science of the relations; but according to the hypothesis it is not a science of the relations as subsisting among entities, and still less a science of entities. Those who hold that science is knowledge of *entities* would regard the methodical, analytical, or mathematical treatment of abstract relations as a branch of logic or of philosophy but not as a science. Philosophy also is largely a rational theoretic statement and critical discussion of relations among entities. Recently it has become so in a more especial sense than ever before. Philosophy, it would now seem, cannot proceed without further discussion of relations. A brief study of the logic of relations is therefore a proper propædeutic.

The attempt to define relation in general, or in the abstract, has usually led to the admission that whatever is meant by it is indefinable in simpler terms, irreducible in logic and in metaphysics, as are entity, element, and substance. It seems valid in logic to generalize relation, but in metaphysics and in science it is with the plural, *relations*, that thought and knowledge are engaged. Relations are *not* entities, nor elements; they are *not* the substantive terms; they are *predicative* to substantive terms, or to entities. The terms,[1] or entities, to which the relations are

[1] It is regrettable that this word is so often used ambiguously, now for entity, now for name. Here it intentionally makes the transition between "substantive terms, or entities," and "linguistic terms," and "names," in the following sentences. Hereafter *term* will more consistently be distinguished from *entity* and from *relatum*.

predicative are not predicative of their relations; they do not define them. Yet language has distinctive and attributive terms for most relations, and these may indeed be used as grammatical and as logical substantives. That is terminology, however, not definition, even though the linguistic term that names a relation denotes one or both of the logical terms thereby related. Thus the relation between part and whole is named the *part-whole relation*, and the relation between subject and object is termed the *subject-object relation;* the relation of the volume of a gas to the temperature and the pressure may be termed the *volume-pressure relation*, and the relation of history to geography may for convenience be called the *geographical relation*, yet these names do not define or describe the relations, though as names they may signify definite classes and imply definition, as definition may summarize description. So the complex relations of woman to social organization may briefly be termed *the woman question*, but that term does not define either what woman is or what the question is. Nor does any term, whether linguistic or logical, *define* the relation which it denotes or into which it enters. Hence relations are indefinable in simpler substantive terms.

But predicatively relations may be defined; distinctive predicative terms may state in what the relations are predicative to their relata. It may then be validly stated that *all relations subsist among entities or elements, and all entities subsist in relations. There can be no entity without relations;* absolute being without *any* relations is unknowable, inconceivable. How could an entity be known or conceived without entering at least the relation of being known or conceived, that is, a relation of some kind to knowing subjects? Wholly unknowable and inconceivable entity could not subsist in any ulterior universe, nor in any metaphysical system, without *some* relation to such system or to its parts. The very terms system, universe, imply relations; and to deny all relations in any metaphysics would be to contradict the terms of our logic.

Relation implies entities; *there can be no relation without relata, entities related.* A mathematical point may be regarded as con-

sisting in relations and nothing else; but, if so defined, it would be a mere position, not an entity; nor would the geometrical line, consisting of points, be a real entity, nor the geometrical square, nor the cube, nor any geometrical configuration of relations, though of course the graphical representations of such would be entities and material. It seems convenient, however, even if not quite consistent, to extend the term *entity* to the field of geometry, even to points and lines, whether graphically represented or merely ideal, and to regard a point as a geometrical element.

Relations, subsisting among elements, are with them constitutive of complex entities. The only entity that is conceived as existing without parts is a mathematical point, and that is conceived as an element existing in geometrical relations, and constitutive of geometrical entities. In entities having parts there must be relations among the parts. Properties, or qualities, are not substantive entities, nor elements, but are predicative of relations internal to the entities and affecting other and external entities. *There can be no composite entity without internal and constitutive relations.*

Again, relations are constitutive of entities, the parts, or elements, or components of which they relate. Conversely, entities are constituted of components and relations. To the complex entities the components and the relations are *internal.* To the components those same relations are *external. A relation may be internal to a complex but external to the elements or components of that complex.* An obvious corollary is that the relations of a thing may some of them be external and some of them internal. A complex may have external relations to other external things, and these relations, external to the things of lower order of complexity or organization, would be internal to the more comprehensive complexes thus constituted; and so forth through all the spheres of the universe of entities subsisting and existing in relations. More briefly, *a relation may be external to one complex while it is internal to another.* The terms *external* (*extrinsic*) and *internal* (*intrinsic*), *or constitutive*, are thus *relative* to the order of complexity, or to the sphere of existence penetrated by the analysis.

These predications have prepared the way for a definition in substantive, though not in simpler terms: *Relations are modes of existence, in which entities exist and by which entities are constituted into more complex entities.*

Relations always constitute with the entities or elements that they relate complex entities predicatively different from the relata. Thus the things A and B in a relation r compose a complex entity ArB, which is different from A and from B, and in which the complex Ar differs predicatively from the relata, from A and from B, and in which the complex rB likewise differs from the relata. For a concrete example, the handle of a tool is one thing; the handle *and* its relation to a hand is a complex other than either handle or hand, and other than that special relation of handle to hand; the handle *in* the hand and the hand *holding* the handle are complexes logically different, both predicatively and substantively, from handle and from hand and from the special relation. It is the relation that renders these complexes different from the relata.

We should avoid confusing the thing A with the complex Ar or with the relation r, for, as was said above, they are three different things. There is a question whether the relation enters or becomes part of the relata and whether these are thus modified by the relations. From this question has arisen the controversy whether relations are *always* internal to their relata or *always* external. As in most controversy, there has probably been too much opposition on both sides. It is not so much a question whether relations in general enter into the constitution of things in general, for it is usually admitted that they do; it is rather a question whether the thing is the same with the relation, or in it, as it is without it.[1] The answer depends upon

[1] Professor Perry in his *Present Philosophical Tendencies*, p. 319, has stated this opposition very moderately: "But according to the theory of the externality of relations, terms acquire from their new relations an added character, which does not either condition, or necessarily alter, the character which they already possess."

"According to the contrary view, relations penetrate, possess, and compromise their terms, so that it is impossible to separate the terms from the relation without destroying them."

"The procedure of logic and mathematics—any procedure, in fact, which employs the method of analysis—is necessarily committed to the acceptance of the

what is meant by 'the same.' If *same* means continuously identical in constitution of parts and *internal* relations, in properties and *inherent* attributes, then the hand *is* the same, and the handle *is* the same, whether they are in the special conditioning relation or not; but the *action* of the hand and the *function* and the *utility* of the handle are by virtue of this relation what they were *not* when the hand and the handle were separate. It is to the action, function, utility, or other resulting complex that the special relation is internal or constitutive; to the attributive, functional, potential complex Ar, or to rB, the relation r is internal, that is, the relation modifies the properties or potential functions of the hand, or of the handle, and *adds* to what may be attributed to either; and it is likewise internal to the actual, completed complex ArB, to the terms of which it is not merely attributive but predicative. In other words, the hand becomes *effectually* changed by its holding the handle, and the handle becomes *virtually* changed by entering the hand. Yet hand and handle, A and B, remain physically and *internally* the same, flesh and wood, active and passive, agent and instrument.[1]

This brings us back to the statement that some of the relations of a thing may be internal and some of them external, and that a relation may be internal to one complex, or in one aspect, and external to or in another. As there are degrees of complexity for entities, so there are degrees of complexity or complicity for relations. Some relations, such as that of radius to circle, are comparatively simple, or may be described in simple or familiar terms. Other relations, for instance, that of terrestrial tides to the attraction and the position of the moon, are very compli-

externality of relations. The method of analysis presupposes that the nature and arrangement of the parts supplies the character of the whole. If such were not the case the specification of the parts and their arrangement would not afford a description of the whole, and one would have to be content with an immediate or mystical apprehension of it."

[1] In another aspect the externality of relations to the attributes or qualities of the relata is stated by Mr. Bertand Russell: "The view I advocate is, that a term a may have a relation to a term b without there being any constituent of a corresponding to this relation. If this were false, simple terms could have no relations and therefore could not enter into complexes; . . ." *Journal of Philosophy, v. 8, p. 159.*

cated. Some indeed, such as the relation of the demand for pork to the supply, can not be extricated and completely analyzed, can not be conveniently or scientifically formulated. The statement of such complicated relations is theory involving hypotheses, conventions, and approximations. Then some relations are more general, that is, they are found in a broader range of various things, or phenomena, as the relation of demand to supply, in general, or the relation of weight to mass, or of name to class. Other relations, whether simple or complex, are special to definite classes of things, and may be defined in specific predications, or with specific terms, for instance, the relation of a mosquito to what we call a mosquito 'bite.' And some relations may be quite individual.

Philosophers may argue that, as a thing can not be completely or even adequately known or described apart from its relations, these are in that sense internal and constitutive. The distinctions drawn in the foregoing paragraphs may perhaps help to clear our thoughts of that confusion of relata with relations.[1] An illustration may show, furthermore, how common sense and indeed all science are dependent upon such distinctions being sustained. This acorn in my hand is, let us assume, an object existent in reality. It is *conditioned* by external relations, spatial, temporal, causal, and perceptual, yet it is apprehended as discrete, as defined by bounds, as confined by its exterior, and as constitutionally distinct from other things, with which it has evident external relations, from my hand, from the tree out of whose bud it developed, from the sunshine whose energy has been stored in its tissues. We need not forget, nor deny, these exterior and ulterior relations, but to comprehend them now as part of the acorn or as constitutive of it as an *acorn*, or to apprehend the acorn as but an incomplete part of the tree, or of the universe, would be very inconvenient, would be as poetically transcendent to present thoughts and purposes as it

[1] For instance, there is something like confusion in the following: "A relation then may be described as the whole situation into which the terms which stand in the relation enter; so far, of course, as the situation concerns the relation." . . . "Now if a relation means the whole relevant situation into which the terms enter, there can be no entry into the relation distinct from the relation itself." S. Alexander, *Mind*, N.S., v. 21, pp. 307 and 313.

would be to previse here the potential oak-tree that might arise if the seed were planted, or to see in our little acorn the future timber that shall fortify a ship's side against an angry sea.

Yet our acorn is internally complex. Let us turn to the microscope and the molecule. We enter here a universe of infinitesimals. The unit is no longer the acorn, but the cell, the atom, the electron. To these the constitutive relations are external. If we could analyze the atom and the electron, we should probably find that they too are constituted within and within of internal elements and motions and relations. But in a method of such omniscient comprehensions the human intellect may be dazzled by too many lights, the reason overstrained by the glare of illumination. It is not strange that those philosophers who maintain the internal theory of relations in its extreme statement should sometimes seek relief in the penumbra of a mystified metaphysics or in the ineffable twilight of poetry. In this view all things are interrelated and interpenetrated by their relations, everything entangled in an infinity of relations, which ramify to the bounds of the universe; nothing can be separated by analysis, nothing distinctly known, nothing comprehensively described, not until knowledge is as complete as the universe is unitary. Things are mere centers of perception or attention, and science is merely a tissue of convenient conventions and approximations, an imperfect makeshift. Thus the internal theory of relations issues in an anti-intellectualist philosophy.[1] Here is a rallying-ground for the neo-vitalist, for the intuitionist, and for the mystic. The philosopher Bergson and the scientist Driesch are too scientific themselves to intend utterly to disparage science, but some of their intrinsically poetic writings seem likely to mislead followers, who may not only write metaphysics poetically but may habituate their reason to revel in poetic imaginations.

It is scientific, also philosophic, and indeed poetic, to conceive that all things are complexes of internal elements and relations, existing in relations that are external to them while internal to larger complexes, that all things are relative, that relations are

[1] Prof. E. G. Spaulding in his "Defense of Analysis" in *The New Realism* (pp. 164–169), has criticised this theory very acutely.

all constitutive, and that the constitution of things is unitary, the universe. In fact to deny this is unscientific and unphilosophic. *Pace*, pluralists. If we avoid confusing entities with their relations, and with the complexes of which the entities and their relations are constitutive, we may, however, analyze and define things as discrete, without negating either relativity or unity. Each thing being a component of a more comprehensive complex, we may analyze the more comprehensive in terms of the more elementary, and the elements we may describe as parts of the complex. But the terms and the definitions should denote only the complexes whose logical extension they comprehend. And the external which *conditions* an entity should be distinguished from the internal which is *constitutive* of it.

In our perceptual and analytical knowledge we are dealing with objects that appear as discrete and with terms that are accepted as definite. What the term *acorn* denotes is the class of objects of specific form, constitution, and properties. Internal and external relations may be connoted or implicit, but in the term they are not explicit, nor in any simple predication or judgment into which the term may enter. It is convenient and it is logical to use the term as definite for this distinct class of objects. The very purpose of terms is to delimit definite denotations. The definition tends to include some of the external relations; "the relations tend, with familiarity, to become attributes of their *relata*."[1] But this tendency should not lead to the confusion of the terms with their external relations; for it is inconvenient, and if the tendency is carried to the extreme it is impossible for thought in its various processes and operations to support the burden of everywhere comprehending *all* the relations that may subsist in the reality of the universe.

Terms and definitions, it is true, are only means in the development of knowledge, and analysis and description apply especially to the comprehensive mode. Immediate apprehension of things in their concreteness, their flux and change, and the intuitive beliefs and interpretations of the human mind may indeed afford us more vivid, intimate, and satisfactory knowledge of

[1] Tawney, PHILOSOPHICAL REVIEW, Vol. XXII, p. 303.

reality. Not too much, however, should be made of the difference between the apprehensive and the comprehensive mode; and, so far as biological and intellectual values are relevant, the conceptual and comprehensive knowledge is no less valuable to life than is the intuitive and perceptual, while it tends to become of even higher value to intelligence. This synthetic, comprehensive knowledge depends upon consistency in terms and in definitions.

To confuse a thing with one of its relations, to think that A, or B, is r, is less unpardonable than to confuse one relatum with its correlate, that is, to mistake A for B. Thus, to assert that the line between two points is the relation between them, as did the philosopher James,[1] is hardly less erratic than to declare that the line is the distance. *The distance-in-that-direction* is the special relation between the two points; but the line is not that relation, it is not the distance; it is the graphical, or the metrical, correlate having its own other relation to that relation of the distance. In these cases we are dealing with confusions of relata with their correlates. It is by similar confusions that certain 'new realists' and 'radical empiricists' merge the conscious state with the objective entity with which it is correlated, or knowledge with the thing known, or the experience with that of which there is experience.

The way has now been prepared for a consideration of relations of dependence. That relations are constitutive of entities implies that complex entities are dependent on the relations as well as on the relata. That the entities are dependent on their constituents is not, however, reason for saying that those constituents are all dependent upon one another within their complex, that the parts are dependent on the whole, or on one another. But what is meant here by *dependent?* Are related entities always dependent on one another? These questions go very deeply, involving the logic of causation and contingency, and the constitution of all systems and of the universe. If 'in relation with' and 'constituted of' meant dependent on, everything would be dependent on everything else and on all relations,

[1] William James, *Principles of Psychology*, v. 2, pp. 149–150.

and nothing would be extricable or distinct. This use of the term 'dependent' in its most extensive sense would be in keeping with the extreme doctrine that all relations are internal, as held by certain philosophers.

But that doctrine we have rejected. Nor is it admitted here that relation *always* implies dependence, that every thing is dependent (in a proper sense of the term) upon all the things to which it is related. That every thing is dependent on *some* thing is indeed an ontological postulate verified throughout the domains of science. On the other hand, that some things are independent of certain other things is quite consistent with knowledge and with terminology. A more positive distinction may now validly be stated. Things are not all dependent upon all other things in the universe, even though they be all interrelated. A thing A may be in a relation r to another thing B without being dependent on B. This is especially apparent in such abstract relations as those of mere likeness or analogy or position. A white-oak tree might be in the peculiar relation to another white-oak tree of being antipodal by precise measurement, so that the two trees would stand out from the extremities of a diameter of the earth; but this relation would in no wise make them dependent on each other for anything in the nature of oak-trees. If there is any kind of dependence in this relation, it must be more sophistical than significant. If similarity and analogy are kinds of relation (and are they not usually regarded as such?), then the arm of a derrick is related to the arm of any man, though it is dependent upon those arms only that made it and those that are working it. And the relation of equality does not render the equal things dependent on one another, nor does the relation of distance, however small, unless some other relation to some other thing determine some direct or partial dependence. Two cities in proximity may be dependent on each other in many ways, not by reason of the nearness itself, but through economic relations resulting from the proximity. Relatedness does not always imply dependence of the relata on one another.

Dependence is not a status subsistent in a special kind of rela-

tion in which one thing is necessary to the existence of the other thing as such. If the one cannot exist without the other, the dependence is *complete;* but if destroying or changing the relation, or one of the relata, produces a corresponding change or variation in the other relatum, the dependence is *partial* or *variable.* For instance, the relation of the candle-flame to the candle is completely dependent; for, when the candle is consumed, the flame ceases. Yet dependence is seldom so simple as in this instance. Even here the flame is dependent on other things also, on a supply of oxygen, on the match that lights the candle, on the hand that applies the match, and so through the degrees of contingency. Many of the facts and happenings of life and of history are reducible to this type of dependence upon an 'efficient cause,' interrelated with many contingent causes. The candle too has its history, and for its qualities the candle-flame depends upon the special properties of the candle and its materials. And the action of the hand that lights the candle has also its history of contingencies too intricate to be traced and apparently endless. The sinking of the steamship Titanic was directly caused by her striking that particular iceberg, but it was dependent also upon a net of contingencies which determined that the icebergs should have drifted to that latitude and longitude and that that particular low-lying iceberg should have been at that moment in the steamship's path; and why she had not taken the safer course farther south, and why her speed had not been reduced when warnings had been received, and why she was in danger of that kind of iceberg and that kind of collision, and so forth through the maze of whys and wherefores. This is the type of the accident with a history conditioning it. It may be contrasted with the type of a history with a salient accident upon which the causation turns and seems chiefly to depend. The conquest of England by William the Norman depended mainly upon England's being in that special state of disorganization and upon the aggressive ambition and vindictive character of William. That Harold was shipwrecked and that under William's compulsion he made promises which soon afterward he broke, these are accidental and contingent.

Between these two types of historical happening there are all possible intermediate kinds of complex contingency, in life, in history, and in science.

The relation of the tree to its shadow on the snow exemplifies another kind of dependence, which may be termed *dual*, as contrasted with the candle-flame, which exists in *simple, complete* dependence on the candle, though changeable by various *contingent* relations. The shadow is completely dependent not only on the tree but on the sunlight. Its changes depend indeed on the changing position of the sun. It has, however, other variable relations with the intensity of the light and the contour of the ground on which it falls. So there is constant change in the shadow's branches or tracery on the snow. Here also many interrelated contingencies condition the presence of the tree and the sunlight and the snow.

An interesting type of contingent dependence is that of lock and key. This is the type of *constant, or permanent physical correlation of the parts of two complex things*, whether natural or constructed by art. Apart from its key, the lock is a lock and is *structurally* complete; and the key is a complete key apart from its lock. But there is a structural relation between this particular key and that particular lock. The locksmith would say that the lock were incomplete without the key, as the builder would say that the door were incomplete without the lock; but what they are thinking of are the complexes, door-with-lock and lock-with-key. As was said before, the components should not be confused with the complexes. Now suppose the door has never been locked to debar entry, that the key has never been turned in the lock, but has lain in a drawer. The door and the lock would still be structurally related, and the lock and the key would still be structurally correlated, but the relations would then be of not actual but merely *virtual* dependence. The relation of the lock to the door would become actually dependent on the relation of the key to the lock, if a hand were actuated by a purpose to lock the door. This contingent dependence may be symbolized by $Hr''Kr'LrD$, and is thus *triple*, while the dependence on each term is complete. The

permanent physical correlation of the key with the lock is, however, the most significant part of the complex relation. There is also a contingent dependence upon the adjustment of the door to its jamb. Thus a relation of dependence may be itself dependent upon other relations of dependence, or a relation may imply contingent dependence, or things may be dependent in one relation whereas in other relations or conditions of change they may be non-dependent or but *virtually* dependent. Natural science is replete with instances of similar physical, structural and functional correlations, in which complete dependence is contingent or virtual.

Another type is that of complete dependence upon a variable quantitative relation. For instance, the soap-bubble blown from the clay-pipe by a child depends upon the pipe as the candle-flame depends upon the candle, but it also depends upon the comparatively constant pressure of the child's breath and the steadiness with which the pipe is held. A little jerk and the bubble bounds away from the pipe and drifts into the air. It floats so far and no farther. The liquid film evaporates; the surface tension can no longer retain the gaseous contents, and the bubble dissolves in a breath of the breeze. Beyond a certain limit of pressure the bubble would burst at the pipe and vanish. Here we have variable quantitative relations of complete and of partial dependence. Mathematics and physics are largely occupied with such relations.

To the physiological and psychological correlations with physical entities another type is intermediate. The rainbows in the misty spray of a fountain are contingently dependent upon a special relation of refracted sunlight to the spray. The *rainbow-light* is completely dependent upon the spray playing into the sunlit air, and variably dependent upon the changing sunlight shining about the fountain. When the sun is shining brightly there and the misty spray is in the sunlight, we may say that rainbows are there a plenty, but they are unseen till the children come there and from all possible angles find them and delight in them. As optical phenomena, rainbows have this duality of aspect. The physical entity and the physical relations consti-

tute what we called the 'rainbow-light.' This itself is of dual dependence on sunlight and on spray, is quantitatively and contingently dependent on the dispersion of the light by the drops of spray. The physiologico-psychological relations, the peculiarities of the eyes, the angles of vision, and the chance and changing positions of the children in their motions, and the psychological variations of sensation, these too are of dual dependence, and are virtual or contingent. In this complex relation we have duality of relations themselves of dual dependence; and it is typical of physiological and psychological phenomena of stimulus and response, of all things seen, and heard, and felt, and of all things known. Surely, in the face of such common duality, we should not fear the terms *dualism* and *correlation*.

If all entities subsist in relations and if relations are constitutive of complex entities, the question remains, are relations real? The relations that are constitutive of real entities should be regarded as real, or the entities would be real as respects their components and non-real as respects their constitutive relations. That would be a confusing consequence. One would hardly know whether to regard a candle-flame in relation to its candle as less real than the candle without the flame, or indeed as less real than the candle-flame without the candle; and the celebrated smile of the Cheshire cat would indeed be more real without the cat than with the cat. To deny categorically that relations are real would render the term *real* not only one of the vaguest but one of the most valueless in philosophy.

We should not, however, hypostasize relations as though they were entities. That would be as bad as to confuse them with their relata. They may be apprehended or comprehended in various degrees of knowledge, they may be perceived or conceived in various modes or situations, they may be expressed or represented by various means or methods; yet they have not existence as have entities and qualities. Relations are not easily cognized or conceived apart from their relata; and some things can hardly be separated in thought from their external relations; yet relations are neither complexes of components nor of qualities; they may be real, but they are not existent. From the psychological

view, ". . . the relation itself becomes a special conscious content distinct from the contents which are related, though indeed inseparably connected with them."[1] That this distinct content is not merely ideal is more explicit in the following statements by the psychologist Angell: ". . . that the consciousness of relation is a basal factor in all activities of attention; that our attention is sometimes more, and sometimes less, directed toward the extant *relations* than toward the *things* related; but that no moment of cognitive consciousness is wholly lacking in the awareness either of relations or objects."[2] James, merging reality in experience, is quite explicit in asserting that relations are real: ". . . *the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as 'real' as anything else in the system.*"[3]

The relation of contact of two bodies is as immediately apprehended as are the bodies themselves, or the qualities of the bodies; and it seems consistent to state that the contact is as real as the bodies are. Of course there may be a mere optical appearance of contact relative to the position from which two bodies are seen; but then the relation is not one of contact but of *apparent contact.* Contact moreover is physically relative, and is qualifiable in thought. The relation of the acorn to the oak-tree is in this sense real only when the acorn is on its twig; when the acorn is in my hand, its relation to the tree is ideal, or conceptual, or remembered. This is not to say that the same relation may now be real, now ideal; for these two cases imply two *different* relations; the relation of *the acorn on its twig* to the tree is real; the relation of *the acorn in my hand* to the tree is ideal, or conceptual. But in cases of virtual or contingent dependence a realizable relation may be cognized as real, or converted into a real relation. There may be an ideal relation of rainbow to fountain, or contingently a realizable relation, or conditionally a real relation of the refracted rainbow-light to the fountain's spray.

Relations would thus appear in dual aspects; they would be

[1] Wundt, *Outlines of Psychology* (1897), p. 250.

[2] J. R. Angell, *Psychology*, 4th ed., p. 248.

[3] *Essays in Radical Empiricism*, p. 42. (The italics are his own emphasis.)

regarded as real in the constitution of real entities, whether known or unknown, and in perception and attention; in conception and in thought, in judgment and in reasoning, they would be regarded as ideal, as subsisting in the relating tendency of the mind. When the relata are not apparently connected or dependent, or the dependence is unknown or virtual, the relations may appear to be ideal rather than real. This duality of aspect and this apparent vacillation between reality and ideality arise from similar duality in consciousness and in knowledge, and similar vacillation between the cognition of reality and the cognition of ideality. But the relations themselves are some constantly real and some constantly ideal, as the entities they relate are some real and some ideal. Ideal and conceptual relations are contrasted with real relations as ideas and concepts are contrasted with realities. Yet underlying all is the universal reality.

In general most relations are real, though some are merely ideal. In their reality, however, as in their being, they are different both from entities and from ideas; they differ from entities in that they are not existent; from ideas they differ in that they are real, or, if ideal, are but *constitutive of or attributive to* ideal complexes or complex ideas, are not simple ideational or cognitive elements; however complex, they are attributive or predicative to their relata; yet they may be substantive in logic, as they are in grammar. Relations that are constitutive of real entities are real in that they are involved in the reality of the entities; relations that are constitutive of ideal or conceptual entities are ideal or conceptual, unless they are apprehended as real. An ideal complex or comprehensive concept may be partly composed of real entities and real relations. The concepts of science are thus composite of real and empirical elements in rational combination with conceptual relations and ideal entities. Relations that are external to real entities may be real. Unknown entities existing in relations are real, if their existence can be verified; and their external relations, if these can be verified, are also real. Ideal entities too may have their external relations, and these may either be ideal or be real, be conceptual or be perceptual.

This doctrine that in general relations may be and mostly are real can not be definite until reality has been defined; yet in treating of relations it seems proper to answer these questions, for we shall find that reality itself cannot be discussed comprehensively without reference to the relation of subject to object and the relation of entities to being and to existence.

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THE DILEMMA OF DIDEROT.

M. RENE DOUMIC,[1] in a critical essay entitled "Who is the Author of the Works of Diderot?", has thrown out, as a kind of provocative aside, a question of curious interest in itself, and of which the answer takes one rather farther than might at first be supposed. "Another question," he says, "has to do with a kind of mystery which surrounds the last years of Diderot. Whereas, for a dozen years he had published book after book: the *Pensées philosophiques*, the *Bijoux*, the *Lettre sur les aveugles*, essays on dramatic art; suddenly he ceased to publish, and, for more than twenty years, the only work which he gave to the public was the dull and tedious *Essai sur les règnes de Claude et Néron*. What could have been the cause of this sort of retirement?" Of no other great writer of the century is this true. And the question becomes almost an enigma if we remember that "the moment when he ceased to publish was precisely that which saw the completion of the *Encyclopédie*": it was the moment too when Diderot, thanks to Catherine II, became financially independent; the moment, therefore, to which he had looked forward all his life for seriously attempting the creative work which vexatious responsibilities and grinding toil had hitherto made impossible.

The plausible, surface answers to this question are all alluded to by M. Doumic, and easily disposed of as inadequate; and it seems to him that a satisfactory answer, at the present moment, is not to be had. Yet he proposes an "hypothesis, for what it is worth." The hypothesis is that Diderot, who possessed the qualities and the defects of the bourgeois, "had also the supreme ambition of the clerk who for forty years has worked faithfully at his desk, or of the man of affairs who has, during his whole life, been up at six o'clock in the morning: the desire, namely, to be one's own master, to be dependent on no one, to follow one's fancy, to enjoy life from day to day, and take the hours as

[1] *La littérature française*, V, p. 87.

they come." And in support of this hypothesis we are presented with the letter, often quoted, which Diderot wrote to Mlle. Volland, September 10, 1768. "I do nothing, absolutely nothing, not even this *salon*. It is true that at night when I go to bed my head is full of the finest projects for the morrow. But in the morning, upon rising, there is a disgust, a torpor, an aversion from pen, ink, and paper, which is an indication either of laziness or declining powers. It is much pleasanter, with legs crossed and hands folded, to remain two or three hours with Madame and Mademoiselle, bantering them about everything they say and everything they do. When at last they grow weary of me, I find it is too late to begin any work, so I dress and go out. Where? In faith, I know not: sometimes to the house of Naigeon, or Damilaville."[1]

For this hypothesis there is doubtless something to be said. The correspondence of Diderot in 1765, about the time of finishing the *Encyclopédie*, reveals the pleasure with which he looked forward to his vacation, to a life of solitude, to days free of care spent with his books and his friends. But the letter which M. Doumic quotes proves rather too much, if it proves anything; the inference from it being that Diderot ceased to publish because he ceased to write. Now, it cannot be maintained that Diderot had ceased to write. The letter just quoted must not be taken for more than it is worth,—the expression of a passing fit of depression and disillusionment. In the letters of this period Diderot does not often profess to be idle; more often his tale is of some work going on; and over against the letter in which he says that he does absolutely nothing, one might set many others in which he complains of working day and night. "I think I have never worked harder in my life," he writes to Mlle. Volland, July 4, 1769. "I retire at an early hour; arise at break of day; and as long as the day lasts I stick to my study. . . . My publishers wish to print two volumes at a time."[2]

It is quite true that much of what he wrote during these years was written for others,—for Grimm, or Galiani; that much of it took the form of rough notes scribbled on the fly leaves of the

[1] *Oeuvres complètes*, XIX, p. 272.

[2] *Ibid.*, p. 309.

books he read,—notes not written for publication so much as to satisfy an insistent demand for self expression. But it has generally been supposed that much of Diderot's most original and characteristic work was produced after 1765; and the elaborate edition of his works, prepared by Assézat and published in 1876, confirms this supposition. Yet it is precisely in connection with this supposition that the essay of M. Doumic raises an interesting question. It is well known that M. Dupuy, in a critical study of one of the minor works of Diderot, the *Paradoxe sur le comedien*, has shown that the 'revision' of this work, which Assézat, along with every one else, attributed to Diderot himself, was in fact an astonishingly free recasting of Diderot's original sketch by Naigeon. And on the basis of this revelation, M. Doumic raises the larger question of whether the other posthumous works of Diderot were left by him in their present form, or whether they were not also 'revised' by Naigeon: who, after all, it is the primary purpose of his essay to ask us, was the author of the works of Diderot? It is from the point of view of this larger query that M. Doumic looks at the fact that Diderot published almost nothing after 1765: was it perhaps because there was nothing to publish,—nothing but work for others, or rough sketches which were later elaborated by Naigeon, or another, after the manner of the *Paradoxe sur le comedien*.

That Naigeon revised rather freely many of the manuscripts which Diderot left with him is quite possible. He was the man to do that sort of thing, and Diderot gave him full authority to do it. Yet it is most likely that his activity in this respect was confined to the less important manuscripts, of which the *Paradoxe* is itself an example. That Diderot did not write the *Paradoxe* in the form in which it was published after his death, one can easily suppose; that he did not write *Rameau*, for example, or the *Physiologie*, or the *Entretien*, or the *Refutation*, one can less easily believe. If Diderot did not write these works, who else, one may well ask, could have written them? Certainly not Naigeon. These works, to mention no others, are in conception so original, or in substance so profound, so oddly fashioned in point of form, so unpremeditated in point of arrangement, that

the completest criticism, it is safe to suppose, will never seriously deny that they are in fact the works of Denis Diderot.

And so the question remains, why did Diderot, who published many books when he was too busy, as he tells us, to do good work, publish none when he acquired the leisure to write, and did in fact write, some of the most profound and original works of the eighteenth century? It is quite right, in answering this question, to take M. Doumic's hypothesis for what it is worth. And it is worth a good deal. Diderot is surely the great writer of the century of whom it would be least safe to assume that publication would follow production. Expression, for Diderot, was a primary need, like breathing; a flow of talk satisfied this need best; lacking that, he wrote. Besides, some of his later works, such as the *Entretien*, were of such a nature that publication was not to be thought of. But these considerations scarcely explain why, having published almost everything that he wrote up to a certain date, he published, after that date, almost nothing, although he wrote more then than ever before; and this in spite of the fact that his publishers, as he tells us, "wish to print two books at a time." The explanation I think is partly to be found in what may be called the dilemma of Diderot; and the explanation is perhaps worth noting because the dilemma of Diderot brings into relief those social and intellectual conditions which gave to French thought in the latter part of the century a peculiar direction and a distinctive character.

II.

Modern critics and biographers of Diderot have remarked the extraordinary versatility of the man. There was scarcely any field of knowledge wholly unfamiliar to him, scarcely any question interesting to the men of his day to which he had not given much thought, or about which he was unable to say something really worth while. This was also the opinion of his contemporaries. Voltaire thought him "perhaps the one man capable of writing the history of philosophy."[1] "In every branch of human knowledge," said Marmontel, "he is so much at home . . . that

[1] *Oeuvres complètes*, XLIV, p. 190.

he seems always ready for what is said to him, and observations made on the spur of the moment strike one as the result of recent study and long meditation."[1] His published works tell the same story,—mathematics, natural science, philosophy, romance, poetry, the drama, literary and art criticism, political economy and political science, the psychological novel; and although he produced, with one possible exception, no masterpiece, nor scarcely anything systematically thought out in any of these fields, he threw the search light of his imaginative intelligence upon all of them. And Diderot's versatility was something more than familiarity with all fields of knowledge. It was the versatility which comes of the capacity to take in respect to every subject, for experimental purposes as it were, the most opposed points of view, to understand instinctively intellectual conceptions the most divergent, to experience with genuine sympathy the most antipathetic emotional states. Diderot was, as some one has said, the century itself: in him all the currents of that age, deep or shallow, crossed and went their separate ways.

And yet the multiplicity of Diderot's interests is largely on the surface; the variety of subjects with which he was occupied has somewhat obscured the essential unity of purpose which guided his all-embracing intellectual curiosity. Although he professed a profound contempt for metaphysics and religion, it is not too much to say that the only things which interested him vitally,—and it is perhaps in this that he is most truly representative of the century,—were precisely metaphysics and religion. It was not after all metaphysics that he despised, but a particular type of metaphysics,—the metaphysics that had been so largely shaped by mediaeval Christian thought; nor religion that he hated, but the Christian religion as embodied in the Catholic Church; and his aversion from the prevailing type of metaphysics and religion was tinged with contempt and hatred just because he desired above all things to put in their place a new metaphysics and a new religion, a metaphysics rationally defensible and a religion morally sound.

[1] *Mémoires*, I, p. 487.

Of these two interests, the more fundamental was that which centered in the theoretical and practical aspects of conduct. The extraordinary enthusiasm of that age for 'virtue'—"ce fonds de rectitude et de bonté morale, qui est la base de vertu," as Marmontel defined it[1]—is revealed by the most cursory glance at its literature. A generous action fired even those men like Voltaire about whom there was something hard and metallic. The statement of Fontenelle, that he had "relegated sentiment to the eclogue," aroused in the cold and upright Grimm a feeling very near aversion.[2] The little Abbé Galiani greatly displeased Diderot one day by "confessing that he had never shed a tear in his life." Tears were thought to be the outward sign of an inward grace, and Diderot, whose tears were never far from the surface, struck his contemporaries precisely by those qualities which, by inclining them to weep, were the sure evidence of his being a man of virtue: much more than his penetrating intelligence, it was his good heart that won their devotion. His friends, says Madame d'Épinay, regard Diderot as more profound than Voltaire, "but above all it is his character about which they grow enthusiastic. Grimm says that he is the most perfect moral man he knows."[3] And nothing could have pleased Diderot more than to feel that he deserved such a tribute. His devotion to virtue and morality was something more vital than the intellectual interest of a student of ethics; he wished not only to analyze virtue, but to practice it, and to induce others to practice it. He was always "preaching morality," as Sainte-Beuve says: always possessed of a profound faith in it as a reality, and as the most vital reality; always searching for an immovable basis for it in reason and nature; and although never able to find for it a quite satisfactory basis of that sort, still he preached it to the end of his life. "There is nothing in the world," he wrote about 1757, "to which virtue is not preferable."[4] Twenty years later he was of the same opinion. "I am convinced that even in a society as ill ordered as ours, where the vice which succeeds is

[1] *Mémoires*, II, p. 195.
[2] *Correspondance littéraire*, III, p. 345.
[3] *Mémoires*, I, p. 405.
[4] *Oeuvres complètes*, XIX, p. 449.

often applauded, and the virtue which fails is almost always ridiculed, I am convinced, I say, that on the whole one can do nothing better for one's own happiness than to be a good man."[1]

It was this profound faith in the reality and value of true morality that inspired the hatred which Diderot professed for false religions, of which Christianity, as embodied in the Catholic Church, was the chief; false, not primarily because they were based upon false premises, although that was true enough, but because they made bad men. "Wherever people believe in God, there is a cult; wherever there is a cult, the natural order of moral duties is reversed, and morality becomes corrupted."[2] It should be possible to have a religion based "upon the primitive and evident notions which are found written upon the hearts of all men." Such a religion, he thought, would have no unbelievers. Such a religion it was the business of philosophy to establish; or rather, 'philosophy,' as Diderot understood it, *was* such a religion; a religion which would approve itself, not primarily because it would have no unbelievers, but because it would make good men. The extraordinary lack of reserve exhibited by the writers of the century, and especially by the greatest of them, the amazing frankness with which they laid their souls bare to the public gaze has sometimes been noted as a curious phenomenon. In fact nothing could have been more in keeping: 'philosophy' was something infinitely more to them than a body of correct inferences; it was a faith, to be justified, if at all, only by the conduct and the motives, and particularly perhaps by the motives, of its devotees. Unbelief and immorality were synonyms in the language of the Church, and it was therefore essential that the man who published his unbelief as the foundation of a new morality should wear his heart on his sleeve for the world's inspection. "Yes, I am an atheist; but look into my heart and examine my conduct and you must admit that an atheist may be a good man." Diderot has always the air of crying this aloud. Rousseau's *Confessions* is only the most striking example of the disposition, shared by most of the reformers of the age, to disrobe in the market place in order to

[1] *Op. cit.*, II, p. 345.

[2] Oeuvres choisies, V, p. 16.

reveal the shining beauties of the natural man. "It is not enough," said Diderot, referring to the theologians, "to know more than they do: it is necessary to show them that we are better, and that philosophy makes more good men than sufficient or efficacious grace."[1]

"It is not enough to know more than they do;" yet that was necessary too: to know more than they do in order to undermine the intellectual foundation of their false system of morality; to know more theology than the theologians in order to refute their theology; to know more science in order to discredit their appeal to miracle; to know more history in order to disprove their claim to authority; to know more psychology in order to expose the viciousness of their moral regimen. This is the secret of Diderot's interest in science and philosophy. To discredit the old theology it was necessary to attack metaphysics; and although Diderot professed to be occupied only with scientific experiment, it is clear that in his philosophical and scientific works, from the *Pensées philosophiques* to the *Physiologie*, his primary interest is in questions of a metaphysical nature; scientific experiment was necessary only as a new means of approach. What interested him in the *Physiologie* was the ontological question: Is all mind, or is all matter? What interested him in the *Lettre sur les aveugles* was the bearing of a physiological experiment upon the question of the existence of a God. And Diderot inquired so intently into all the specific scientific activity of the day just because the new metaphysics, the new conception of the origin and nature of the universe, was necessarily to be based, as the old metaphysics had not been, upon positive knowledge derived from observation and experiment.

The solution of the metaphysical problem which commended itself most strongly to Diderot, which he set forth towards the close of his life in the *Entretien* and the *Physiologie*, was what may be termed vitalistic materialism. All is matter, said Diderot, because without matter nothing can be known or explained: "The soul is nothing without the body; I defy you to

[1] *Oeuvres compètes*, XIX, p. 464.

explain anything without the body."[1] To explain the soul in terms of matter he was quite willing to think of matter, even inorganic matter, as sentient; and many suggestive things are said for the purpose of showing, after the manner of Hamlet, how marble dust might be transformed into thought. What matter might be in itself seemed to him a fruitless question. The world is as it behaves; so regarded, matter is the manifestation, infinitely varied, and continuously changing, of the energy that moves the universe: a vortex of moving forces,—to this the substance of the world reduced itself in the final analysis.

As to the origin of a world thus constituted, one may find different answers in the works of Diderot. The deistic explanation, which he first accepted, after the manner of the English deists, was soon renounced; it raised more difficulties than it disposed of; and he was left in the end with no more satisfactory solution than chance. But if the world originated in a mere fortuitous combination of forces, what of its purpose and end? It would be difficult to inject purpose into an accident. And yet the accident seemed rational in its form and operation: nature was intelligible, and Diderot seems often, in his reverent apostrophes, to conceive of it as therefore intelligent; in moments of enthusiasm he all but deifies nature, attributing to it something very near beneficent purpose. But most often, when the question is presented directly, he can find no sufficient evidence for believing that the continuous change of form, constant and uniform though it might be, was a change from 'lower' to 'higher,' from worse to better; so far as reason went, it seemed quite as likely that the universe was returning to the dust heap from whence it came.

It would doubtless be a mistake to think of Diderot as having worked out a coherent philosophy, upon which he was ready to take his stand against all comers. If he sometimes ran his thought in the mould of logical categories, he never left it there to cool and harden. Diderot's mind was far too plastic, too continuously generative and creative, to formulate a rigidly

[1] *Op. cit.*, IX, p. 377.

consistent, a perfectly integrated explanation of things; far too curious and inquiring, having formulated such an explanation, to surrender to it past escape. In the very act of shaping a system essentially materialistic, we find him coquetting with notions which, if resolutely pursued, might have led him to the camp of Hume. "What do I perceive? Forms. And what besides? Forms. We walk among shadows, shadows to ourselves and others. If I look at a rainbow, I see it; but for one who looks from a different angle of vision, there is nothing."[1] Diderot has often the air of wishing to avoid the conclusions to which reason led him. But he had none of Rousseau's talent for ignoring difficulties; and the conclusions of the *Entretien* and the *Physiologie* are those which, had he thought it necessary to proclaim any, he would most probably have professed.

But then what was the bearing of such a philosophy upon the problem of morality and conduct? No question that it destroyed the intellectual basis of morality as taught by the Church; but it was one of the ironies of fate that the speculative thinking of Diderot, of which the principal purpose was to furnish a firm foundation for natural morality, ended by destroying the foundation of all morality as he understood it. This was the dilemma, that if the conclusions of Diderot the speculative philosopher were valid, the aspirations of Diderot the moral man, all the vital purposes and sustaining hopes of his life, were but as the substance of a dream. For reason told him that man was after all but a speck of sentient dust, a chance deposit on the surface of the world, the necessary product of the same purposeless forces that build up crystal or dissolve granite. Aspiration, love and hope, sympathy, the belief in virtue itself,—what were these but the refined products of mechanical processes, spiritual perfumes, as it were, arising from the alternate waste and repair of brain tissue? Freedom was surely a chimera if the will could be defined as "the last impulse of desire and aversion."[2] And "if there is no such thing as liberty, there is no action which merits either praise or blame: there is neither vice nor virtue, nothing which can properly be rewarded or punished. What is

[1] *Oeuvres complètes*, IX, p. 428.
[2] *Ibid.*, II, p. 175.

it then that distinguishes men? Good action and bad action. The bad man is one whom it is necessary to destroy rather than to punish: good action is good fortune but no virtue."[1] Surely if philosophy, which was to "make more good men than sufficient or efficacious grace," could teach nothing more reassuring than that vice is something for which the individual is not responsible, something to be avoided only in so far as it might be found out, it could furnish little inspiration for the preaching of morality. In that case, the religion of philosophy, Diderot was vaguely aware, must remain as vain a delusion as the philosophy of religion.

The works of his later years reveal this conflict between the two Diderots,—Diderot the speculative philosopher unable to ignore reason, and Diderot the emotional preacher of morality unable to renounce his conviction that good action is a virtue. Turning, for example, from the *Refutation*, written in 1773, to the *Physiologie*, written in 1774, we find there, as M. Caro says, "another Diderot revealed to us."[2] But the most striking, the most artistic presentation of the dilemma of Diderot, and perhaps a conscious and deliberate presentation of it, is to be found in that little masterpiece, the *Neveu de Rameau*, written about 1762, probably in reply to Palissot's *Les philosophes*, but revised later and given the form in which we have it about 1772–1774.[3]

The real Jean François Rameau appears to have been an eccentric who amused his contemporaries by maintaining that the end of all effort was to "place something between the teeth," and so accomplish the laws of mastication. With this concise philosophy of life as a nucleus, Diderot has constructed a character compounded of pure intelligence, swelled and festering appetites, and an entire lack of feeling for any moral obligation. "He shows the good qualities that nature has bestowed upon him without ostentation, and the bad ones without the smallest

[1] *Op. cit.*, XIX, p. 436.

[2] *La fin du dix-huitième siècle*, I, p. 219.

[3] *Oeuvres complètes*, V., p. 361. There is a later edition by Monval, prepared for the *Bibliothèque Elzevirienne*. The essential parts of the dialogue have been translated by Lord Morley and printed as an appendix to his *Diderot*, II, p. 285.

shame,"—so Diderot speaks of him. "I have," he is made to say of himself, "a mind as round as a ball, and a character as fresh as a water-willow":—a mind, that is, to which other men's experience has added nothing, a character shedding, as a water-willow sheds water, the effects of good and evil action. In no sense the product of society, unaffected by tradition or the pressure of conventional habit, Rameau is simply Diderot's materialism personified, a creature whose will is precisely nothing but "the last impulse of desire and aversion," a kind of Frankenstein's monster such as one might construct from the principles of Diderot's *Physiologie*, an example of the natural man, stripped of all 'artificial' accretions, functioning in society as it existed, in Paris, about the year 1772.

With this creature, whose outward circumstances are those of a finished social parasite, Diderot the moral philosopher enters into conversation; and the inimitable dialogue, touching upon many things, running hither and thither without apparent object other than to while away the hour, is in reality a searching inquiry into the basis of morality. Rameau is no straw man ingeniously constructed to fall over at the right moment. He is Diderot's other self, possessed of Diderot's powerful rationalizing imagination, and of his profoundly sensuous nature, looking out upon a corrupt society in the perfectly dry light of reason untouched by sentiment or any altruistic impulse.

Now reason tells Rameau that nature, that chance combination of purposeless forces, made him what he is, "sloth, madman, and good-for-naught"; and, not being responsible for what he is, he feels no obligation, and therefore no desire, to be better than he is, but only more happy. "Everything that lives, without exception, seeks its own well being at the expense of any prey that is proper to its purposes." Therefore he, Rameau, will seek his well being, his happiness, by the "vices that are natural" to him, and not (how could that be?) by the virtues that are natural to some one else. And this is his happiness, "to drink good wines, to cram one's self with dainty dishes, to rest on beds of down; except that, all is vanity and vexation of spirit." It is useless to appeal, as Diderot does, to the higher

pleasures of self-sacrifice; these are not higher pleasures because, for Rameau, they are not pleasures at all; quite useless to appeal to the welfare of society, for happiness is individual, society is but an abstraction, and the conventional morality is only "what every one has in his mouth but what no one practices," a convenient mask which enables "men to keep the vices that are useful to them while avoiding their tone and appearance." A strange notion you philosophers have, says Rameau in effect, and all systems of morality are based upon the fallacy, that "the same kind of happiness was made for all the world." What is good for you, Diderot, may be bad for me, Rameau, and while you may suppress me I deny that you can know what makes me happy.

The dialogue ends, characteristically enough, without reaching any solution. "I see," says Diderot, speaking of the happiness to be derived from self-sacrifice and the performance of duty, "that you do not know what it is, and that you were not even made to understand it"; and Rameau replies, "so much the better." The basic thesis, which Hume thought axiomatic, that a thing is good because useful, not useful because good, was accepted without question by both Diderot and Rameau. But what is useful, and who is to judge? The dialogue turns on this. To be sure, the useful is what brings happiness; but the irresponsible creatures of a mechanical universe found that what made one happy made the other miserable; their standards of happiness were simply incommensurable, and the compact moral world dissolved under their feet in a conflict of wills.

It is worth noting again that Diderot was engaged upon the Rameau between the years 1763 and 1774, for these were probably the years when he first became fully aware of the dilemma of which it is so perfect an expression. These were the years, on the one hand, when his philosophy received its extreme and final formulation in the *Entretien* and the *Physiologie;* on the other hand, these were the years also when the question of practical morality was presented to him in the most intimate and disturbing form possible,—in connection with the education of his daughter. One consolation at least for the folly of a precipi-

tate marriage Diderot found in the child who loved him, and the correspondence reveals to us how much he was concerned, as she came to maturity, to give her a good education, an education of which the chief part was to be, as he says in the *Rameau*, "a great deal of morality." It is true, he taught her some curious morality; but his principal aim seems to have been to demonstrate that "there is no virtue without two rewards: the pleasure of doing well, and that of obtaining the good will of others."[1] This was in 1769, and it was also in 1769 that the *Entretien* was written: so that one may picture Diderot the speculative philosopher, encased in his famous dressing gown, retiring, some morning of that year, to his study, and there engaged in explaining the soul in terms of matter and motion; but in the afternoon, transformed into the doting father, coming forth to teach his child a "great deal of morality," as he walks with her in the park. This very morning, perhaps, he committed to cold paper that desolating doctrine about the will,—"last impulse of desire and aversion." And what is the moral instruction which this philosophy inspires him to convey to his daughter in the afternoon? Something original surely, something profound, at the very least something unconventional? Not at all. Excellent bourgeois that he is, he tells her to be a good girl! So strangely remote sometimes, as Diderot found, is philosophy from life.

What use to preach "a great deal of morality" to a creature whose will is nothing but "the last impulse of desire and aversion"? This was the question which came to stare Diderot in the face about the year 1765; and about the year 1765 he ceased to publish. Diderot had no intention, indeed, of publishing works like the *Entretien*, as he told Mlle. Volland when it was written. Some great constructive work on morality, which should prove that "one can do nothing better for one's own happiness than to be a good man," was, as he tells us, "the most important and the most interesting to be written"; and that was the work which he most wished to write,—"which I would recall with the most satisfaction in my last moments." But

[1] *Oeuvres complètes*, XIX, p. 321.

he never wrote such a work. "I have not even dared to take up the pen to write the first line. I say to myself: if I do not come out of the attempt victorious, I become the apologist of wickedness; I will have betrayed the cause of virtue, I will have encouraged men in the ways of vice. No. I do not feel myself equal to this sublime work; I have uselessly consecrated my whole life to it."[1] Diderot never wrote such a work; but perhaps the "dull and tedious *Essai sur les règnes de Claude et Néron*" may be taken as a frantic, half-despairing effort, at the last moment, to thrust upon the world the fragmentary and ill-digested results of his thinking on the subject.

And why indeed should a man whose ambition was to contribute something towards the regeneration of a corrupt society publish philosophical works which taught nothing more reassuring than that "good action is good fortune but no virtue?" Or works on morality which had nothing more original to say than that virtue is good action? Under the circumstances, it would be as well perhaps to throw the manuscripts into the fire. Diderot did not, indeed, throw his manuscripts into the fire; but he gave them to Naigeon.

III.

The dilemma of Diderot is chiefly interesting as a concrete example of the fundamental intellectual difficulty of the century, —fundamental at least for those who were primarily concerned for the social regeneration of France. The empirical method, announced by Locke, and carried to its logical conclusion in one direction by Hume and in another by the French materialists, was thought to be an excellent instrument, so neatly did it shelve the Absolute, so effectively bring all values to the relative test, for undermining the theoretical foundations of the *ancien régime;* and, for this purpose, excellent it undoubtedly was: effective for purposes of criticism, but, for purposes of reconstruction, not so effective; and in truth Empiricism, so far from destroying the *ancien régime*, ended by intrenching it more firmly than ever. For the last word drawn from the premises of

[1] *Op. cit.*, II, p. 345.

Locke in that century was that man and nature were one. But if man was only a part of nature, if all his action and all his thinking were determined by forces beyond his control, then 'society' must be 'natural' too; superstition was in that case as natural as enlightenment, the *ancien régime* in France no less a state of nature than primitive Gaul or second-century Rome. The identification of man and nature, and the conception of both as the necessary product of uniform natural law, had done nothing more after all than to put blind force in the place of God, and by eliminating purpose from the world leave men face to face with the *reductio ad absurdum* that "whatever is is right."

A hopeless conclusion like this might satisfy a poet in search of resignation and an epigram; and in England, where most men, if not resigned, were fairly content with things as they found them, it was generally thought to be profound. In England, indeed, much keener men than Pope, if they were suspicious of the poet's epigram, were well satisfied with the philosopher's restatement of it in terms of relative utility, as Hume restated it: whatever is is relatively good, because relatively useful, useful in relation to the conditions that produced it: a statement which in our day has been illumined, but not essentially changed, by the scientific law of survival and the results of historical research. This solution of the ethical problem was perhaps the only one possible from empirical premises; at least it is the one which would most naturally occur to one steeped in the empirical philosophy of the time. But why, in that case, did it not occur to Diderot? One might almost say that it did. Diderot, curiously enough, was in some respects nearer the modern point of view than Hume. That utility was the test of virtue, he took for granted quite in the manner of Hume; he just failed of formulating the theory of evolution in terms of natural selection;[1] the idea of progress was ready to his hand; it remained only to combine these ideas, to interpret the philosophy of 'perpetual flux' in the light of the resplendent theory of perfectibility, to have anticipated most of the characteristic political and ethical

[1] Caro, *La fin du dix-huitième siècle*, I, p. 179.

speculation of the nineteenth century. It may well be asked why after all there was any dilemma for Diderot? Since he was on the very frontier of the promised land, why did he not enter and possess it?

The answer must be sought in those social conditions which determine the drift of fruitful speculative thinking. In France men were not content with things as they found them. If the French 'philosophers' were certain of anything, they were certain that the existing régime, so far from being best, was not even relatively good, but evil, and the parent of all evil. What they needed was a standard for judging society rather than a principle for explaining it. The overturning which men like Diderot dreamed of required some fixed and sure fulcrum not to be found in the shifting sands of relative utility. And so, in France, the Absolute, so contemptuously thrown out of the window early in the century, had to be brought in again, by some back stairs or other, at its close. To weigh the *ancien régime* in the balance and find it wanting, it was necessary to separate society from nature once more, to make a distinction between the natural and the artificial man, to disengage the abstract man, naturally good, from the tangled skein of temporary circumstance which made him bad.

It is well known that such a separation was effected by Rousseau: "man is born free, but is everywhere in chains," "naturally good, it is society which corrupts him,"—so ran the famous formula of the new dualism. But Rousseau cut the knot instead of untying it; and it is worth noting that many of those who denounced his methods were themselves seeking for some valid principle which would effect just this separation of the natural from the artificial man. It would be interesting to follow Diderot himself in the vain search for such a principle: his recurring interest in contrasting the sentiments of the savage with those of the civilized man; his attempt to find some instinct common to all men, such as pity, from which the social virtues might be derived; above all, perhaps, his desperate resolve, revealed in his correspondence with Falconet, to see in the lessons of history and in the judgments of posterity some stand-

ard, more or less absolute, by which the particular act, the concrete institution, might be judged:—what was all this but the effort to discover, as Kant said, "the constant elements in man's nature in order to understand what sort of perfection it is that befits him"?[1]

Few men, it is true, were philosophers enough to be troubled by the difficulty which Diderot never solved, and which Kant himself solved only with the aid of Rousseau. To the unphilosophical person the difficulty presented itself in a less technical form. Many a 'fervent soul,' like Madame Roland, whose emotional nature had found abundant nourishment in the literature of Catholicism, renounced the harsh creed of the Church only to be chilled by the cold and barren rationalism of the very philosophers whose works had pointed the way to intellectual emancipation. "The atheist," said Madame Roland, "is seeking for a syllogism, while I am offering up my thanksgivings." "Helvetius hurt me," she says in another place. "He destroyed the most ravishing illusions, and showed me everywhere a mean and revolting self-interest. *I persuaded myself that he delineated mankind in the state to which it had been reduced by the corruption of society.*"[2] Here was a mind already attuned to the siren voice of the man whose over-topping egoism enabled him to credit himself with virtues which he regarded as natural, while charging his neighbors with vices which he felt had been thrust upon him by an artificial society. To direct Kant on the way to fruitful speculation in the rare upper regions of pure philosophy, and at the same time to inspire Madame Roland and her kind with an unquenchable faith in the fair destiny of humanity, required other talents than those which Diderot possessed.

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LAWRENCE, KANSAS.

[1] *Sämmtliche Werke*, II, p. 319. Quoted in Hoffding, *Hist. of Phil.*, II, p. 72.
[2] *Works of Madame Roland*, II, pp. 108, 115.

REVIEWS OF BOOKS.

La Pensée et les Nouvelles Écoles anti-intellectualistes. Par Alfred Fouillée. Deuxième Edition. Paris, Librairie Félix Alcan, 1911. —pp. xvi, 415.

This volume is the last complete work which Alfred Fouillée gave to the world. A glance at the list of his writings shows how wide was the range of his intellectual effort and how active his pen. His death removed one of the most productive, and, it may be added, one of the ablest philosophers of the time. The newer currents of thought, which for the moment have made Bergson the almost exclusive centre of interest, have tended to withdraw attention from the more systematic and classical thinkers in France. Without doubt, too, the same influences have led to an enormous exaggeration, at least in popular thought, of the importance of what the new philosophy has to offer.

The fashion of the day in philosophy is unmistakable. There is a demand for something new and agreeable. Many, it is evident, are determined to take what they want, whether a clear title of possession can be established or not. Philosophy *à la môde* must first of all discredit science, proving it to be a bankrupt who escapes disaster only by a brave outward appearance. Scientific scepticism becomes the ready sponsor of philosophic and religious faith. When nothing is surely known one may believe anything one chooses; and the inability to offer complete and rigorous disproof of a thing, however improbable, constitutes 'the right to believe' it. If I cannot positively demonstrate that there are no snakes at the North Pole, I am quite at liberty to assert their presence there, and in case I may have wished to reach the pole, I can console myself for failure by the reflection that I thereby avoid the snakes. Philosophy must not be too rigorous in its criticism, but must leave numerous loose ends of belief dangling for the drowning to catch at. It must also have scrupulous regard for the natural desires and even the capricious longings of human nature. These, as immediate data of experience, will easily assume the rôle of intuitions. No one is so poor in mental resources as not to be able to afford the luxury of some amiable and consoling intuitions; and, thanks to the new philosophy, one is assured that these may be regarded as ultimate and authoritative truths. It is further a part of the new creed that those ideas which seem to work well are

true; and they are true because they work well, they do not work well because they are true. If hard pressed to justify any accepted belief one can always retire within the borders of mysticism. That is the silent land where no voice of logic or reason is heard, so that the traveler there is protected from every challenge of the intellect.

Such, in brief, are the prevailing winds of doctrine. Against them Fouillée set himself to write. In the preface of the work he points out that he was one of the first to react against the excesses of intellectualism. In his psychological analysis he gave the primacy to the will. But at the end of his career he found himself clearly opposed to the anti-intellectualists of the day, represented in various quarters by empiricists, intuitionalists, pragmatists, sceptics, and those advocates of faith who desire the mantle of philosophy to give dignity to their theology. These misologists, to use Plato's term, however radically they may differ in other respects, all agree in accepting Pascal's dictum, "*Taisez-vous, raison imbécile.*" As the Chanticleer of the poet pretends that it is his morning song that makes the sun rise, so the new philosophy, losing the conviction of objective principles, makes truth depend upon subjective interpretations.

American readers of Fouillée's work will find their interest centering in the latter half of the volume, where he deals critically with the new philosophy of the sciences, with pragmatism, and with intuitionalism. I shall confine the present discussion to this portion of the book, and shall attempt by a free rendering of the author's thought to present his essential position. The study of Fouillée may be warmly commended to American students of philosophy, and especially to our academic youth who, because reflective reason does not give them all they crave in the presence of the problems of existence, are often tempted to put their trust in short and easy methods.

In analyzing the modern philosophy of the sciences Fouillée finds that its pretended novelties reduce to three contentions, viz.: (1) the artificial nature of the definitions, principles, and postulates of science; (2) the purely provisional character of all scientific truths or laws; and (3) the acceptance of convenience as a criterion of the best conventions and as a substitute for truth.

It is inexact and misleading, he insists, to say with M. Le Roy and others that the concepts and definitions of science are decrees or fiats of intelligence for which one could substitute the opposite. In geometry, for example, the postulates which serve as definitions impose themselves upon us by virtue of our mental constitution in relation to the constitution of extended objects. They are therefore

not arbitrary, nor could the opposite be substituted for them. They do not depend upon any fiat, whether of one individual or of all individuals. It is true, of course, that different geometries, free from all logical contradiction, can be derived from different systems of definitions and postulates. It would be astonishing if this were not the case, since given principles, both true and false, must yield their logical consequences. Such inner logical harmony, however, proves absolutely nothing as to the truth of the principles themselves. If we suppose that only even numbers exist and gratuitously suppress all the odd numbers, there will result an arithmetic of even numbers. Or in a system of political economy one might assume certain elements of the actual order eliminated, for example, the altruistic sentiments which counterbalance in part the sentiments of egoistic interests. In such a system all sorts of logical consequences could be drawn which would be, like the present formulations of economics, partially susceptible of mathematical statement. One would not flatter oneself, however, that by such a procedure anything had been established concerning the actual economic order. And if the representatives of certain new geometries were as skilled in logic as they are in algebra, they would never imagine that they had established either possibilities or realities by their hypotheses and deductions.

What then of the contention of M. Poincaré and others that "one geometry is no more true than another"? All here depends upon what one understands by "true." If it mean simply internal coherence of demonstration following accepted hypotheses, then obviously any one will be as true as any other. But if truth be interpreted to mean truth of premises and principles as well as of consequences, the case is obviously quite different.

Fouillée also subjects to criticism the current views which would represent mechanics and astronomy as tissues of convention. What, he asks, of the inertia of matter as a mere postulate? "Admettre l'inertie, c'est appliquer le principe de causalité et conclure que, étant donné un système mécanique qui est animé d'un mouvement déterminé, une nouvelle cause mécanique sera nécessaire pour modifier le mouvement du système. Si l'on objecte que nous ne pouvons pas *expérimenter* sur des systèmes dégagés de toute influence extérieure, cela prouve précisément que notre affirmation de l'inertie est une déduction de l'absence de causalité spontanée qui caractérise la matière. Nous faisons abstraction de tout libre arbitre inhérent aux molécules matérielles; et comme, jusqu'ici, aucune molécule ne nous en a réservé la surprise, notre déduction et notre induction s'appliquent à la réalité.

Où donc est la convention? où est le décret de l'esprit? Nous sommes en plein déterminisme causal. Le jour où nous verrons un rocher se mettre vraiment *tout seul* en marche, nous en déduirons la présence en lui d'une volonté analogue à celle des êtres vivants, et il ne nous restera plus que deux choses au choix: ou bien adorer le rocher comme le sauvage, ou bien déterminer en biologiste ce nouveau genre d'êtres vivants " (p. 239).

For the rest, the theory that would make science consists of a group of conventions always moves in a vicious circle. No valid convention or hypothesis is arbitrary. It is always chosen for a reason and has its sufficient logical ground. Against the dictum of Poincaré that " Science is a collection of conventions that harmonize," Fouillée would assert that " Science is a collection of reasoned propositions that harmonize only in the measure in which they are not mere conventions."

In opening the discussion of pragmatism Fouillée seeks for a definition of the doctrine, a task made difficult by the diversified forms which it has taken; in fact, there are as many pragmatisms as there are pragmatists. " Pragmatism," he says, " is the theory which refuses to the intelligence a power of true, objective knowledge, and sees in it only an instrument of action useful and efficient for varied human ends."

As regards the psychological aspects of the theory there are shown to be significant resemblances to Fouillée's own doctrine of *idées-forces*, but also important differences which can not be disregarded. The doctrine of *idées-forces* recognized fully the dynamic and functional aspects of ideas. These aspects, however, Fouillée considers from a truly scientific point of view, that of causality. States of consciousness have unquestionably the power to produce effects. As these effects may be servicable for human ends, the principle of finality must be recognized and given its appropriate place. But finality will always be subordinated to a prior or superior relation, that of causal agreement between thought and the objects of experience, in other words, truth. The truth of experience is thus a case of reciprocal causality discovered in the mutual action of objects upon us and of ourselves upon objects. Instead of saying with James that the functional efficiency of ideas constitutes their entire logical content, Fouillée urges that ideas are efficient only in the degree in which they mean something logically and experimentally, only if they correspond to exact connections and relations. These connections may be of various kinds, existing between different judgments, or between the

objects of experience, or between our judgments and movements and these objects. The truth of an idea constitutes its power; the power of an idea, in itself alone, does not make it true. It is important not to reverse the order of these terms.

Pragmatists have insisted upon the cases in which we make ideas true by believing them, as when James asserts that the belief in one's ability to jump a ditch is a necessary condition of the successful jump. Fouillée in *La Liberté et le Déterminisme* has likewise said that it is necessary to believe in the possibility of victory over the passions in order to conquer them. But Fouillée well says that if our ideas can be thus realized it is due to the inner power and the external possibilities which these ideas include and express.

Another form of pragmatic statement says: "Think of a thing, and behold! it becomes something more." In this Fouillée sees the exaggeration and misapplication of a true doctrine. Obviously this proposition would apply only to such things as can be modified by the action of our thought. When, for example, I think of a beautiful star, it is I who become something more in thinking of its beauty; the star does not change in its serene course through the heavens.

The inner contradiction of pragmatism in maintaining that intelligence is only an instrument of voluntary action upon nature in the satisfaction of human desires, lies in the fact that successful action of this kind depends upon foresight. "Pourvoir et prévior sont inséparables. L'intelligence, pour être un moyen d'action et de sentiment, doit donc être avant tout un moyen de connaissance et avoir une valeur de véracité" (p. 288). Thus the fundamental error of pragmatism is the confusion of reciprocal causality with finality, the act of intelligence seeking to understand the interaction of external things with the act of will pursuing subjective ends. Pragmatism not only misconceives the necessary agreement of our thought and our needs with objects, but it also misconceives the necessary agreement of one thought with other thoughts. This latter agreement, no less than the former, is a characteristic mark of truth.

Fouillée considers the various interpretations which pragmatic epistemology has offered. One of these is the identification of truth with that which is useful for life, which aids in the struggle for existence. But are all truths useful for life? How about the truth that we must all die? Not infrequently two opposing beliefs produce the same useful action, provided they are both held with equal assurance. Faith in Jehovah and faith in Baal may well have inspired the same courage in battle and have been equally efficient biologically. Can we

conclude that two such contradictory beliefs are at the same time equally true? Thought unquestionably has its origin in life and its function in the preservation and increase of life. But this is clear evidence that it has an objective value, since life is everywhere subject to determined conditions which are imposed by nature, not by our wills.

Pragmatism also invokes as a criterion of truth sentiments and feelings of satisfaction, including of course intellectual satisfaction. It is freely granted that the validity and harmony of ideas is a source of satisfaction, but the essential condition of such satisfaction is that there should be first of all a reality and truth independent of our satisfaction. He who reasons well is satisfied with his reasoning, but it is not because he is satisfied that he reasons well; people who reason badly are often quite as well satisfied with their folly.

American readers may recall that a writer of philosophy among us some years ago declared it to be a beneficient work to construct a "comforting" philosophy. It goes without saying that for most of us a philosophy constructed for this purpose would not be at all comforting, simply because it would always be open to the suspicion of having followed subjective desires rather than the objective order of truth.

The pragmatism of James, Fouillée finds, abandons in the end its characteristic position and in the last resort says obscurely what all the logicians say in clear terms, when it is admitted that ideas become true in so far as they aid us in entering into satisfying relations with other parts of our experience. For the relations which make one part of experience agree with other parts of experience are logical relations at the same time that they are relations of fact.

The religious significance of pragmatism also receives attention. Fouillée finds here the *arrière-pensée* of many of its advocates. Religion, so their thought runs, has utility; it consoles us in the midst of the evils of the world; it sustains us in sorrow, sickness, and death; it exalts and purifies the soul; hence religion is true. Religion is thus placed on the same footing as science; each is judged true by its practical efficiency. But this view again involves the confusion of subjective and objective without distinction or method. Scientific ideas prove their value by their efficacy in the sense that they permit us to verify the agreement of our conceptions and previsions with our sensations derived from real things. The touch-stone is outside of us, of our will, our desires. Religious ideas, on the contrary, involve reference to objects incapable, in their very nature, of such verification,

and their subjective effect upon our inner states, however happy it may be, is no proof of the objective truth of their content. False ideas, too, may be effective, and, where the ignorant are concerned, they are often more effective than true ones. What of the efficacy of religions among other peoples and other ages? The sacrifice of infants to Moloch gave to the Carthaginians a serene confidence and an indomitable courage, the sure pledge of victory in battle. To-day Islam exercises a tremendous influence upon its disciples. The *fatum mahumetanum* gives them strength in trial and resignation in the presence of death; the miracles of Mahomet transport their souls; and Mahomet's paradise with its *houris* fills them with delighted hopes. To conclude that the ideas belonging to the religion of Moloch and of Mahomet have objective value, and to compare their efficacy with that of science, is to identify two distinct and opposing kinds of efficacy, —one exercising itself upon given objects, the other upon ourselves without direct proof of anything outside.

The final verdict upon pragmatism in view of its historical genesis and relations is pithily and briefly expressed: " *Vera, vetusta, nova, falsa.*"

The last chapter of the book is devoted to intuitionalism, that form of anti-intellectualistic theory of which Bergson is at present the chief representative and sponsor. Tracing the historical descent of intuitionalism, Fouillée notes that the characteristic feature of contemporary forms of the doctrine is that they seek to find super-sensible and super-rational intuitions, which Kant has denied, especially intuitions of life, of spirituality, of creative liberty, identified with the feeling of duration and becoming. Science, according to this view, proceeds only by means of concepts formed in the interest of practice, and is consequently pragmatic and utilitarian. Philosophy, on the contrary, gives a supra-intellectual contact with reality, a perfect knowledge, where knowledge and production coincide. The intuition of Plato, Plotinus, and Schelling, has thus descended from the world of intelligence into the stream of changing and temporal life.

The intuition of our own inner life reduces, says Fouillée, simply to the spontaneous or reflective consciousness of active or passive changes in us, which reveal nothing whatever except our own existence, or rather our becoming. As for the intuition of other beings, there are, it is said, two fundamentally different ways of knowing a thing, the first when one moves around it, the second when one enters into it. To this Fouillée replies: " Sans doute; mais comment y entrer? et qu'est-ce ici qu' 'entrer,' qu'est-ce que 'tourner autour'? Voilà

la difficulté. Nous nous saisissons directement nous-mêmes parce que nous sommes tout entrés en nous; mais comment pénétrerons-nous en autrui? Pour cela, la *comparaison* et *l'induction* semblent les seuls moyens *méthodiques*. On en propose pourtant un autre, par crainte des 'concepts,' produits de l'induction et de la comparaison; on propose la *sympathie*. Ainsi apparait un nouveau sens de l'intuition; elle devient 'cette espèce de *sympathie intellectuelle* par laquelle on se transporte a l'intérieur d'un objet pour coïncider avec ce qu'il a d' unique et par conséquent d'inexprimable'" (p. 349).

But it is impossible to place myself within an object. I cannot coincide with it, still less with what it contains that is unique, inexpressible, and incommunicable; for then the object would be no longer unique; I should become its like, its double, or, still more impossible, I should become itself. The most intimate sympathy with one's fellows cannot escape the method of thought. Intuition, then, can at best yield a view only of our immediate inner states, and these have far less value for the interpretation of the world outside of us than have our concepts and ideas. As far as the representation of reality by pure sympathy is concerned, it could only result in transposing it into human terms, *ex analogia hominis*. All philosophers, to be sure, have agreed that our inner consciousness is the sole means by which we mortals can represent to ourselves the inner character of things, but they have also agreed that this means must be employed with method, and that due account must be taken of the way in which things manifest themselves externally to us. All possible sympathy with the stone in the road would not justify me in placing within it a conscious will as the savage does.

The intuition appears still more inadequate when we pass to the realm of the ideal. The very word indicates that we are in the presence of ideas, that we are obliged to 'Platonize,' to conceive a possible reality other and better than what now is. The supreme function of philosophy is to acquire ideas which may be forces capable of modifying reality, not merely in view of our material needs but rather in view of our higher needs. If by 'Platonizing' is understood the act of conceiving abstractions and of lending them a fictitious existence, then we need to be aware of the process. But removed from the abstract to living and concrete reality it must remain the essence of all philosophy: "Sans idées, pas d'ideal; sans idées, pas de réalité autre que le point présent de notre devenir individuel" (p. 361). The claim of Bergson that concepts are discrete and relative is ably treated by Fouillée. Of course they are, he replies,

and yet less so than intuitions. As for discreteness, it is the concept, not the intuition, that unites and binds together different times, places, beings, and consciousnesses. It is equally true that the concept is less relative than the intuition, attaining a larger degree of objective truth. As living beings ascend the scale they become more and more dependent upon the laws of life given in concepts and ideas, which enable us to escape the bondage of momentary stimuli and to act under the guidance of reflective intelligence. Instead of gaining the heart of things, intuitions have only a subjective reach of modal and qualitative affections within the individual consciousness. As regards the vital problem of epistemology intuitions completely fail. They are only points of view seized in passage and would be swallowed up in darkness were it not for memory, reflection, and the intellectual operation of the idea.

Bergson, replying to those who like Fouillée criticize the so-called immediate intuitions, says that the return to the immediate removes contradictions and oppositions by making the problem at issue disappear. "This power of the immediate," declares Bergson, "I mean its capacity to resolve oppositions by suppressing the problems, is in my view the external mark by which true intuition is recognized." The obvious but significant answer of Fouillée is that the problem is suppressed only in the sense that it is ignored.

For my own part, I believe that this answer goes straight to the heart of the matter. Indeed, it might well be made the text of an exposition of the rôle which the immediate or intuitive element really plays in our mental life. Of course the intuitions of immediate experience must make the conceptual problems which perplex us disappear, for by definition *they and not the problems* are for the moment the objects of attention. What is the significance of the emphasis which Bergson has freshly placed upon such immediacy? Is it anything new or marvellous? I think not. On the contrary, the truth is an old one, and, strangely enough, the very truth that all sound empirical method, both in science and philosophy, has taught over and over again. It is, in brief, the truth that the material, the content, of all thought must be caught in immediate and direct contact with reality, whether the real be external to us or our own inner life. This content speedily becomes outworn, fossilized, and inadequate, unless it is constantly renewed by fresh contact with the living stream of reality. The doctrine of immediacy is not a constitutive principle of knowledge, but a regulative maxim, which bids us never to rest satisfied with the past, but to keep every concept and idea open to

revision and enlargement by means of fresh observations, tests, and trials. Failing to obey this maxim, science easily degenerates into dogmatism, and philosophy into barren intellectualism. But the other side of the shield cannot be ignored. No sooner is the intuition secured than, by the inherent logic of the mental life, it is put in conceptual form, the form of ideas. Otherwise it will remain isolated and sterile, incapable of serving the ends of pure knowledge or of practical activity. The intuition is merely an immediate datum and is unrelated to our mental life as an organized system of ideas. To pass current either in our own world or in that of our fellows it must receive the stamp of the concept. From the circle in which we pass from immediacy to reflection, from intuition to conception, and then back again, there is and can be no escape. But to attribute to any so-called intuitions our ideas of free-will, spirituality, becoming, evolution, or creation, is a strange and misleading confusion; every one is a concept, the work of reflection upon a vast number of immediate experiences.

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Les Étapes de la Philosophie mathématique. Par LÉON BRUNSCHVICG. Paris, Félix Alcan, 1912.—pp. xi, 591.

This substantial work, which may be described as an attempt at a philosophy of mathematics on an historical basis, is divided into seven books. The first six of these books are in the main historical, giving something of the history of mathematical science as well as of mathematical philosophy. In the last book the author gives his own views in the form of a digest of the previous historical material. As the titles of the different books indicate, the author has endeavored to combine the topical with the chronologic treatment of the subject, and this he has skillfully accomplished by means of very generous omissions. Thus the book on arithmetic ends with Pythagoras, and the next book, on geometry, begins with Plato. The book on the evolution of arithmetism, coming after the criticism of Kant and Comte, deals rather lightly with the arithmetical ideas of Cauchy, Renouvier and Méray. Thus the whole history of arithmetic from the days of Pythagoras to almost the middle of the nineteenth century is omitted, and with it all attempt to estimate the leading arithmetical ideas of men like Gauss or what is technically called the theory of numbers. Similarly M. Brunschvicg dispenses with any systematic treatment of the significance of modern work on the theory of surfaces, line geometry, theory of functions, or vector analysis.

Non-metrical geometry, which some have regarded as one of the most original creations of the nineteenth century, is hardly mentioned (Von Staudt's name does not occur at all). In view of the vast amount of ground covered in this volume, these omissions (like the omission of any reference to the influential though superficial views on mathematics of men like Mill and Schopenhauer), would not be noted except for M. Brunschvicg's assertion (p. vii) that only in a complete survey of the progress of mathematical thought can truth be secured.

The three chapters which constitute Book I, are devoted respectively to the arithmetical operations of 'primitive' peoples, the mathematical content of the Rhind Papyrus, and the Pythagorean philosophy. No logical coherence of these topics is claimed, nor is there any intention to regard the Pythagorean philosophy as on the same level or 'stage' as 'primitive' or Egyptian thought. The reason given for bringing these topics together is that it is necessary to study the mathematical processes of naïve intelligence as well as the body of reflective thought. (M. Brunschvicg uses instead of the latter, the term *dogmatic*.) There is no attempt, however, to show any vital or organic connection between the dogmatic thought of Pythagoras and the unreflective thought embodied in contemporary Greek mathematics. M. Brunschvicg does, undoubtedly, give us many ingenious suggestions as to how reflection on the problems of mathematics determined the philosophy of Plato, Descartes, and Kant, but he never asks the question, why reflective thought, or the dogmatic tradition, arises at all? If he had, he might not have so readily accepted the prevailing misology which regards all dogmatic or philosophic systems as bodies of death, shutting up spontaneous thought, and having no function except the 'bookish' or pedagogic one.

Although Book II is entitled Geometry it by no means restricts itself to that topic, but contains very suggestive accounts of the mathematical philosophy of Plato, Aristotle, Euclid, and the Cartesian school. It seems rather peculiar that Pythagoras should be treated only under the head of arithmetic, and not at all under the head of geometry. But, according to M. Brunschvicg's theory (in which he follows Milhaud), the Pythagorean philosophy considered only finite integers as real, and the discovery of incommensurables lead to its breakdown and to the rise of the Platonic philosophy. This view offers grave difficulties, especially in view of the contributions which the Pythagoreans undoubtedly made to geometry and the antiquity which Aristotle attributes to the discovery of incommensurables; but it offers a very effective approach to the philosophy of Plato which

is thus presented as an effort to show that the intelligible extends beyond the realm of numbers. The Platonic method is shown to consist in the regressive analysis of the sensible data until we come to fundamental hypotheses, and these by a dialectic process are deduced from supersensible principles. The first part of this, the belief that the function of thought is one of analysis, that it is exercised with the aid of the science of numbers and figures, and that step by step it discovers the mathematical relations in the texture of phenomena (p. 70), M. Brunschvicg regards as the essence of positive science and the truth of philosophy, and in that sense Plato did succeed in extracting from mathematics a universal method; but the second part, connecting the mathematical numbers with Ideas or ideal numbers, led to obscurity which caused the downfall of the whole Platonic system, and its replacement by that of Aristotle until the Renaissance. Here, as elsewhere, the author confuses the stages of his discourse with the facts of real history. In point of fact, of course, Platonism did not suffer any such fall or total eclipse, and in the form of Neo-Platonism at least (which does not happen to interest M. Brunschvicg), it kept up a rather vigorous existence. Moreover, the neo-Platonism of the Renaissance was not, as he supposes, altogether positivistic, but full of metaphysical speculation, as the writings of Kepler and Galileo amply testify.

Although Aristotle is painted as an empiricist, founding his organon on biologic science, and discarding the Platonic metaphysic (or metamathematics), still our author seems to have for him very little intellectual sympathy. If Platonism is "the science of the connection between ideas—real science," Aristotelianism is "apparent science, the science of verbal classification" (p. 45). M. Brunschvicg seems to be under the impression that Aristotle got his categories from the grammars of his day, and his grasp of Aristotle's thought in this connection is shown by the fact that he does not discuss the latter's theory of predication or the importance of the category of οὐσία. Possibly if he had, he would not have made the astounding and indefensible identification of the modern logistic movement with the syllogistic of Aristotle, since the former involves a radical criticism of the substantive-attribute theory of predication. In this connection it is well to note that it is essential to Aristotelianism to restrict mathematics to quantity, which modern logistics certainly does not. M. Brunschvicg also admits that the view of modern logic which reduces the major premise to an hypothesis is a departure from the Aristotelian theory.

It is significant of our author's own thought that he does not sympathize with Aristotle's effort to get from the order of knowing to the order of being (p. 79).

The *Elements* of Euclid is regarded as the product of the same spirit as the *Analytics* of Aristotle. Both succeeded in acquiring the appearance of eternal truth independent of historical origins (p. 85). But while outwardly modeled on the Aristotelian logic of classes, the material for a logic of relations is found in the *Elements*, especially in the books on proportion and on irrationals. But the Greeks could not free themselves from the view that mathematics is necessarily a qualitative study of quantity. It required the technical extension of modern mathematics, before the Cartesian generalization of geometry could become possible. By extending Algebra over the realm of geometry the Platonic idea of a universal mathesis is revived, and the algebraic equation becomes " the reason of the determination of the universe " (p. 121). Quantity is no longer drawn by abstraction from the observation of things, but is established a priori by the power of reason (p. 123). There is, to be sure, still in Descartes a certain amount of dualism between spatial quantity and pure algebraic quantity, but these are united into one by Malebranche and Spinoza. In the latter's *Ethics*, mathematics again becomes the science of pure ideas or reality (pp. 147–148).

Book III, dealing with the development of the infinitesmal calculus, and especially with the philosophy of Leibniz, seems to be merely an elaborate interlude or mere episode in this intellectual drama; for in Book IV, devoted to Kant and Comte, the Cartesian thought is resumed and space remains " with Kant the necessary mediator, with Comte the privileged mediator, for the connection of the abstract relations which constitute science, and the empirical facts which constitute reality " (p. 341). Thus the logic of spatial relations continues to dominate science. But the discovery of non-Euclidean geometry has shown that mathematics does not give us a unique determination of space, and the development of analysis has shown that the latter is not dependent on spatial intuition, while the development of physics has shown that the classical mechanics is not the only possible scientific view of the physical world. Hence, according to M. Brunschvicg, the reaction against the logic of spatial relations in the latter part of the nineteenth century. This reaction naturally takes the form of a Neo-Pythagoreanism, or revival of a philosophy or logic of numbers, and a Neo-Aristotelianism or revival of the logic of classes. Books V and VI are devoted to these two movements respectively.

Book V, on the Evolution of Arithmetism, is the shortest in the volume and seems to grow out of a preconceived scheme rather than out of its subject matter. It treats in the main of two topics: (1) the arithmetization of modern analysis, and (2) a certain French philosophic movement rightly called *finitisme* (Renouvier, etc.). The treatment of the former topic is very inadequate. M. Brunschvicg does not seem to realize that the movement began at the end of the eighteenth century with the work of Gauss, and even as far back as Lagrange, and that it is essentially part of the effort of modern mathematics to insist on absolute rigor in demonstration and to eliminate spatia lintuition, because the later—apart from Non-Euclidean geometry—is often misleading and almost always inadequate. The result of this purely technical movement has been to establish methods for our calculus or analysis that are demonstrably just as rigorous as the methods of finite arithmetic. Now the establishment of this homogeneity between the finite integers and other mathematical entities like irrationals, complex numbers etc. (the latter being operations of integers), does certainly render the position of *finitisme* (Renouvier, Evellin, etc.) untenable, but it does not seem to be decisive of the question of nominalism with which M. Brunschvicg connects it. Those who believe that imaginaries, etc., are pure fictions or nominal symbols must now believe that 2 or 7 are likewise so, whereas those who hold integers to represent something objective in nature, must now hold complex and higher numbers to be equally objective. The whole question really depends on whether we shall call all operations or transformations 'mental,' and to the solution of this question mathematics supplies only part of the material.

It might be noted, to the discomfiture of M. Brunschvicg's historical schematism, that the position of Renouvier that only finite integers are representative of reality, is really a reassertion of the Aristotelian doctrine that all actuality is finite and the infinite never more than potential; while logistic philosophers like Mr. Russell are in fact *Platonic* realists. However, M. Brunschvicg's sins in the sixth book, are more serious than schematic illusions.

This sixth book consists of three chapters, one giving an account of the formation of the logistic philosophy of mathematics, and the other two the author's criticism of the work of Mr. Russell.

The development of this philosophy is traced to the growth of symbolic logic and to the *Mengenlehre* of Cantor. The purely philosophical motives such as those which Russell owes to Moore are ignored,—probably because M. Brunschvicg does not think it neces-

sary to inform himself carefully about contemporary English philosophy (see his reference to Reid, p. 390), and seems to be unaware of the existence of a problem about the nature of judgment. But even the technical mathematical influences are not adequately appreciated. The account of the development of symbolic logic is based on insufficient secondary sources (see e.g. his reference to Peirce, p. 379), so that he does not realize how completely the logic of classes is subordinated in modern symbolic logic. While the account of the influence of Cantor's work is somewhat more satisfactory, M. Brunschvicg's schematism makes him miss here the predominant importance of the arithmetization of mathematics. The latter movement has furthered the main logistic thesis, viz., the identity of *pure* mathematics and symbolic logic, first by insisting on rigorous logical proof where formerly we were satisfied to rely on self-evidence or intuition, and secondly, by making the field of mathematics more homogeneous, it has pressed the necessity of greater generality in the definition of the fundamental operations of arithmetic. What, for instance, do we mean by *multiplication*, if this process applies to series? Here, contrary to M. Brunschvicg's assumption of the complete futility of symbolic logic for mathematical investigations (p. 426), symbolic logic becomes a real and needed help in mathematical research.

Although M. Brunschvicg puts his criticisms of the logistic philosophy in historical form, they are, in the vicious sense, a priori, *i. e.*, they are based on assumed self-evident principles which the subject matter in no way necessitates. Among the principles which M. Brunschvicg assumes, and from which he argues are: (1) that all logic is purely analytic, in the sense that it is based on the principle of identity, and hence there can be nothing in the conclusion which was not already in the premises; and (2) that truth can relate only to actually existent entities, hence a pure mathematics or symbolic logic which applies as well to physically non-existent entities must be futile for real 'science.' Now if the claims of modern logistics are inconsistent with these principles, may we not venture to ask whether perhaps these principles are false?

Let us consider the matter from the point of view of the enlightened empiricism which M. Brunschvicg professes and which insists on an examination of the facts of a case instead of an obstinate reliance on preconceived principles which tell us that certain facts cannot possibly be.

The fundamental thesis of the logistic movement is that the whole of what we call pure mathematics can be logically deduced from certain

principles which are also the principle of symbolic logic. This deduction they claim not only as possible but as actually having been accomplished in diverse works of which Russell's *Principles of Mathematics*, and Whitehead and Russell's *Principia Mathematica* may be taken as examples. Obviously the only way to answer this claim is not to keep on shouting forever: "This is impossible because logic can never give us anything but tautologies;" but to show that this alleged deduction or derivation breaks down at definite points. This is precisely what M. Brunschvicg does not do. Indeed there is strong evidence of the fact that he has not read the *Principia* at all, or the *Principles* with any care. The evidence for this serious charge against one who writes as an historian and claims for his judgment the character of being in some sense definitive (p. 394), is to be found in his claim that the whole of Russell's system is founded on the Aristotelian logic of classes and on an ontologic realism as to the existence of these classes. As a matter of fact the logic and ontology of classes figures very slightly in the main argument of the *Principles* and not at all in the *Principia*. Explicitly and emphatically the authors of the *Principia* point out that the ontologic existence of classes is in no way necessary for the argument; and the theory of types constructed to do away with the difficulty in the notion of a class of all classes is already indicated in the appendix to the *Principles*.

The other objections brought against the logistic position are based on the same lack of familiarity with the content of the *Principia* or *Principles*. Thus one chapter is devoted to an attack on the idea of an absolute deduction. But the *Principia* explicitly disclaims the idea of an absolute deduction and merely claims that the principles it sets up are sufficient to enable us to deduce the laws of mathematics from them; and while in the *Principles* Russell does argue for the Newtonian conception of absolute time and space, and the real existence of points and instants, his arguments only prove that the Newtonian position does not involve any self-contradiction, and can, therefore, logically exist. A careful reading of the *Principles*, however, shows that this argument is not a necessary part of the main thesis, and Mr. Russell, if I understand him, has already modified his position in regard to the absolute existence of points. But even if he has not, it would seem fair to demand of a historian that he distinguish between the fundamental thesis of an important intellectual movement and the particular beliefs of its most noted philosophical representative.

Another set of difficulties assigned as the cause of the alleged disso-

lution of the logistic philosophy, is the difficulty arising from an analytic interpretation of mathematics. Assuming quite needlessly that all logical procedure must be analytical, M. Brunschvicg finds in Russell's and Couturat's assertion about mathematical judgments being synthetic, evidence of the bankruptcy of logistics which professes to carry out the Leibnizian idea of a universal calculus and to be opposed to the Kantian view of a synthesis founded in a priori intuition. The procedure of this argument is based on a violent refusal to understand what is really very clearly stated. Russell, in his *Principles* and especially in his book on Leibniz, and Couturat in his *Principes*, very clearly and explicitly point out that logic cannot be founded exclusively on the principle of identity. This, however, is in no way an argument for the Kantian position that the proposition $7+5=12$ is logically indemonstrable or based on sensory intuition. That logical procedure involves some form of *intellectual* intuition or apprehension is, of course, necessary for the logistic position, and Russell and Couturat have clearly admitted it. In this connection M. Brunschvicg might be reminded that, according to his own account, the Aristotelian syllogism involves more than the principle of identity (whence the dogma, nothing in the conclusion which was not already in the premises), and that there is a tinge of biologic analogy in the Aristotelian conception of two premises uniting to generate a conclusion.

Still another argument against the logistic position appears incidentally (p. 402), but is very significant of the author's own position. According to the logistic position *pure* mathematics is not concerned with the truth of any proposition asserted, but only with the question of whether it does or does not imply another proposition. Now as false propositions also have implications, Mr. Brunschvicg is led to the view that the truths of pure mathematics can be of no significance for an objective science. "Truth that one could find in the highest degree in the logical fancies of an Edgar Poe or in the development of a systematic delirium, is surely not the categoric and intrinsic truth which is the condition of scientific knowledge" (p. 402). This is a popular fallacy based on the false belief that truth and science can deal only with the actual. If this were true there could be no such a theory as pure arithmetic. $2+2=4$ would be true only if actual chairs or tables were referred to. It would have no meaning when applied to the operations of a frictionless engine. This view, however, would make a science of physics impossible. Consider the situation when we have two rival physical hypotheses. Of the two surely only one can represent the actual facts.

If from a false hypothesis no conclusion could be drawn, we would have to know which hypothesis is true before we could draw any consequences, but the drawing of consequences would be entirely unnecessary. The actual procedure of physical science does assume that hypothesis and consequences are bound together by strict laws, even when the former is false; otherwise it could not pass from the (factual) falsity of the consequences to the falsity of the hypothesis. Pure mathematics and symbolic logic simply confine themselves to the study of these implications, and the distinction between the actual and the possible can have no meaning in pure mathematics. Hence also pure mathematics must be allowed to enjoy a certain autonomy or relative independence of physics, which, indeed, our author sometimes admits (*e. g.*, p. ix) although this admission is, of course, inconsistent with his refusal to admit a valid distinction between pure and applied mathematics and the kinds of truth involved in each (p. 453).

The alleged breakdown of the logistic philosophy leads to the final stage, the philosophy of intuition, on the basis of which our author elaborates his own philosophy of mathematics,—the final book (Book VII) being entitled "Mathematical Intelligence and Truth." As, however, he claims this philosophy to be the direct result of history it is well to examine the methodological ideas which underly this attempt to found a philosophy of mathematics on history.

To the idea that history can enable us to solve the perplexing problems of our own day, M. Brunschvicg joins the related but distinct idea that the history of mathematical science is necessary to make the philosophy of mathematics intelligible. Now there can be no doubt that in order to understand the various mathematical philosophies of history we must know the character of the mathematical science with which they had to deal. The opaqueness of the usual accounts of the Platonic, Cartesian or Leibnizian philosophies of mathematics by historians unacquainted with the history of mathematics amply illustrates this truth. The interests of historical understanding, however, are not always identical with those of doctrinal evaluation. In discussing historically a philosophy like the Kantian we need to know the ideas of mathematics and mathematical physics of his own day, and the introduction of subsequent discoveries as to the adequacy or inadequacy of these ideas is likely to confuse our historical understanding. This point, at any rate, is insisted on in other fields of history.[1] Moreover, as M. Brunschvicg himself assumes, philosophers

[1] See the Presidential addresses of Lea and Dunning before the American Historical Association 1903, and 1913, in *American Historical Review*, 1904, and 1914.

have not always kept in touch with contemporaneous science. Thus in spite of all the work in modern geometry, analysis, and mechanics, Neo-Kantians like Natorp, still insist that we have à priori knowledge that space is Euclidean and that a non-Newtonian mechanics is forever impossible. The truth is that the problems of the philosophy of mathematics have always been profoundly influenced by general considerations arising from sources foreign to mathematical science, *e. g.*, biology, ethics, etc. Hence M. Brunschvicg's thesis of a perfect parallelism between the 'stages' of mathematical science and the 'stages' of mathematical philosophy is not maintainable; and, as a matter of fact, it is seldom very useful.

The second idea, that historical study of itself can enable us to settle controversial problems, is, judging by the frequency of historical introductions to all sorts of axiologic discussions, one of the dominant ones of our age. When one, however, examines these introductions they are found in most cases to be purely ornamental, or (in the case of writers who, like M. Brunschvicg, take their historicism seriously) they prove only those principles which their author has taken for granted in constructing his history. Indeed, how can anyone possibly organize a large tract of human experience in the way we call history without drawing on his own general ideas or philosophy? Even the doubtful argument that historical facts can speak for themselves could in no way be used here, for in this book we have no complete collection of all the facts, but, at best, a selection of what the author considers typical views.

The solidity of M. Brunschvicg's learning and his undoubtedly keen analytic powers make it rather instructive to note some of the confusion and self-deception to which he is led by the assumption that the history of a branch of philosophy can, apart from the direct analyses of the subject matter, prove anything as to the truth of contending views.

The idea of an instructive history of mathematical thought which presents 'stages,' obviously involves belief in something more than that a careful study of the great masters like Plato, Descartes, or Leibniz is helpful. The latter kind of study need not be chronologic and is obviously futile unless accompanied by an independent vision of the subject matter. The idea of a history of doctrines which, apart from external reflection, can establish philosophic truth must rest on the belief that the time process represents a necessary logical development. It was brought into the history of philosophy by Hegel who consistently with his pan-logism (*i. e.*, all the real is rational)

regards history as nothing but a logical unfolding. But though M. Brunschvicg does sometimes speak of certain doctrinal developments as necessary or inevitable owing to the nature of mind (*e. g.*, p. 369), he is certainly not a conscious panlogist. His actual account of the development of mathematical thought, at any rate, has more dramatic elements than is possible with an Hegelian solitary actor who has to be his own antagonist and peace-maker. The course of mathematical thought has spontaneity, it offers a thousand accidents of a natural stream (pp. ix, and 452); there have been false starts in the direction of dogmatism since the seventeenth century; great insights like those of Pascal (pp. 429, 439) have long been neglected; there have been unaccountable mental accidents like materialism (p. 307); and, worst of all, the prosperity or persistence of a doctrine is admitted to be no argument for its truth or falsity (p. 342). What doctrinal significance, therefore, remains to the historical order as such? From the standpoint of doctrinal truth must not Liebniz or Plato be judged like contemporaries? (*cf.*, p. 397).

It is, I suppose, perfectly natural and proper for a philosopher, especially one who writes an historical introduction to his views, to characterize his own thought as the final stage or great consummation toward which all creation has moved. But how about the previous stages? Are no crumbs of partial truth to be doled out to the form their services? In spite of the assertion that the originality of the new stage consists in that it does not wish to add a new system of mathematical philosophy, but " turning to history itself, it seeks the convergence and coordination of the results which have been obtained at different periods " (p. 463), M. Brunschvicg's attitude to all previous systems of mathematical philosophy is almost entirely negative. The great lesson which his history teaches him is that we must clear the ground of the a priorism which has always infected mathematical thought, and return to primitive innocence (p. 458). I have tried to show that his refutation of previous philosophers like Russell, is flagrantly inadequate. But at best there can be nothing historical in the refutation of a philosopher who is still vigorously developing his thought. The whole futility of the pretensions of historicism seems to me to be admitted in the following passage, which I quote in the original lest my translation be suspected of interposing a distorting medium: "Au contraire c'est à la condition d'avoir compris d'abord la science qui agit et qui s'étend sous nos yeux, que l'on pourra, éclairé par elle, restituer au passé ce qui a été sa vie et son actualité " (p. 458).

When M. Brunschvicg characterizes the final or present stage of

mathematical thought as based on intuition he is unnecessarily projecting the stages of his discourse into a cold and non-compliant world. He argues indeed that mathematics is but the last of the sciences to receive the refreshing and fructifying breath of intuition (pp. 434–437), but he adduces nothing worthy of the name of evidence to show that biologists or physicists have actually changed their methods in accordance with the philosophy of intuition. Nor is it clear how they can possibly do so until we are vouchsafed a more definite explanation of what the method of intuition really means.

I may interpose that I speak here not as a cold or unsympathetic critic. I have myself a sentimental attachment for a doctrine of intellectual intuition to cover the brute fact that we do apprehend intelligible relations that are not sense data, and to call attention to the important problem of immediacy in logic,[1] and I am therefore, ready to bless and be comforted by everyone who comes to speak in the name of my beloved doctrine. But M. Brunschvicg's message completely eludes me.

Intuition is sharply contrasted with logical deduction (pp. 395–396). It is a mental zone not of sense activity or logical reasoning (p. 428), yet it also includes (sensory) spatial intuition and logical deduction (as his remarks on Klein and Descartes indicate, pp. 450–451). Thus being neither sense nor logic and at the same time both it is fittingly characterized as "the profound work of intelligence" (p. 451). Nobody is likely to object to intuition if the latter is defined as "a method appropriate to the specificity of the object" (p. 440), but the only consequence which M. Brunschvicg draws from this is that the method of intuition must replace that of mechanism in physics and biology. But the adherents of mechanism in the latter sciences may well claim that the methods of mechanism are precisely those which are adapted to the specificity of their subject matter.

In the actual development of the details of M. Brunschvicg's own mathematical philosophy the idea of intuition is replaced by the idea of creative intelligence as the key to all the concrete problems of mathematics. Numbers, etc., are viewed as mental creations, and the peculiar harmony or truth which we observe in the fact that the results of our reasoning hold true of nature, is due to the fact that reason and experience are but two stages of the same creative mind or intelligence. So far as this rests on the general doctrine of idealism, it would take us far afield to attempt to discuss it here. I can merely call attention to the fact that the introduction of an omnipotent factor like mind or

[1] Refer to my paper on the "Present Situation in the Philosophy of Mathematics," *Journal of Philosophy*, 1911.

creative intelligence in no way removes such a problem as the contradictions involved in the notion of a class of all classes.

While in the historical portion of his work M. Brunschvicg is sometimes compelled to speak of accidents and failures in the progress of mathematical thought, in his expository book human intelligence seems to have smooth sailing and no resisting medium. Sometimes, indeed, he speaks of mathematical forms as approximations, but as there is no eternal truth outside of the processes of intelligence, it seems impossible to answer the question, approximations to what? In the main the work of the creative intelligence resolves itself into a long game of solitaire.

The motive which leads M. Brunschvicg to this position is quite clear and instructive to follow. Starting with the dogma that all logic is 'analytic,' and the vulgar prejudice that it can in no way help to extend our knowledge, he draws a very sharp distinction between the order of creation or discovery and the order of logic or exposition. In his insistence, however, on the all sufficiency of the order of invention or discovery he forgets or treats with contempt the order of facts.

The facts of mathematical science, however, distinctly refute the assumption of the sterility of deductive procedure. M. Brunschvicg insists that logic comes after "the spontaneous work of genius," and can only consecrate a victory already won or register the defeat. But even so, the implication that such "consecration" or "registration" is completely useless in extending the field of mathematics is absurd, unless we accept the view that genius works most fruitfully when its ideas are most confused. To believe this is really to revive the ancient but pernicious superstition that only the raving and demented are divinely inspired.

I bring this long, ungracious, and perhaps unduly censorious review to a close with the cheerful admission that it gives but a scant indication of the rich content of instructive study and suggestive analysis packed into this volume. The whole volume is written, in the main, with that admirable lucidity and regard for the gist of the matter which is characteristic of the best French exposition. Though the account of mathematical thought becomes more inaccurate as it approaches our own day, the accounts of Descartes, Spinoza, Leibniz and Kant are admirable examples of that painstaking scholarship of which the Germans are still serving as models. But as a positive contribution to the subject its usefulness seems to me vitiated by the naïve acceptance of many of the now fashionable views in philosophy that are

really in no way the outcome of laboratory experience or mathematical investigations; and I have deemed it worth while to call attention in this review to the difficulties of at least three of these fashionable views, viz., (1) the belief that logic, and reflective or 'dogmatic' thought are useless or worse, (2) the disbelief in or disregard of the Aristotelian distinction of that which is prior for us from that which is prior in nature, and (3) the wide-spread delusion that we can dodge the responsibility of a direct examination of the facts of a situation by coming in through the back door of history. Whatever may be the vices of modern logistic philosophy of mathematics, its adherents have at least tried to keep in mind the canons of scientific proof, and to eschew the rhetorical appeals which tend to make philosophy an irresponsible affair.

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Kant et Aristote. Par CHARLES SENTROUL. Louvain, Institut Supérieur de Philosophie; Paris, Félix Alcan, 1913.—pp. viii, 343.

This volume is the second French edition of the author's *L'Objet de la Métaphysique selon Kant et selon Aristote*, published in 1905, (which the present reviewer has not had the opportunity of seeing). The present title is, of course, more concise than precise. Actually undertaking a comparison only of two epistemologies, Professor Sentroul's work was crowned by the *Kantgesellschaft* in its prize-essay contest of 1906 on the subject: *Kant's Begriff der Erkenntnis verglichen mit dem des Aristoteles.*

The author, a former student of Cardinal Mercier at the École St. Thomas, Louvain, and a professor at Saô Paulo, Brazil, frankly champions the Stagirite. In contrast to the irreconcilable dualism which he sees in Kant's theory of knowledge, he points to the coherent epistemological structure of Aristotle. In the introductory first chapter, a general survey is attempted of the two theories; this is followed by a chapter on Aristotle's dogmatic realism, four chapters on Kant's theory of knowledge, and a final chapter on Aristotle's metaphysics. While the two philosophies are constantly compared in the treatment of the particular problems, Kant's system is accorded almost twice as much space as Aristotle's.

The Peripatetic epistemology defines truth as the judging of things as they really are. Is logical truth, then, the *adaequatio rei et intellectus?* Professor Sentroul objects to this formula (*arei*), in spite of the sanction which tradition has lent it. In the first place he finds no textual justification of it either in Aristotle or in St. Thomas; besides

it is objectionable on other than textual grounds; for (pp. 60–61), taken seriously, it limits truth to perfect knowledge and thus places it beyond human reach, yielding to man only the appearance of truth,—a relativistic conclusion wholly at variance with Aristotle's dogmatic realism. Accordingly, instead of the traditional formula *arei*, Professor Sentroul proposes, as more in accord with the spirit of Aristotle's philosophy the formula: Logical truth is conformity of Judgment [which is an identification] with a real identity.

The distinction which Kant makes between phenomenon and noumenon, knowledge of experience and the thing-in-itself, indicate how deeply Kant was impressed by the antinomy involved in the notion of truth. This antinomy had not escaped Aristotle; but in Kant's case the antithesis thought-thing is doubled by the antithesis universal-particular. Professor Sentroul distinguishes between two definitions of truth in Kant. According to the first, truth is the conformity of a judgment with the psychological laws which preside at its objective systematization (p. 110; *cf. Prolegomena*, §13, *Anm.* III). In defending his apparent insertion of the word ' psychological ' into the Kantian definition, Professor Sentroul argues (pp. 110ff.) that, while Kant may not have intended to psychologize, he does psychologize, although not like Hume. Kant's second definition Professor Sentroul finds strikingly similar to the traditional formula *arei*: *die Uebereinstimmung unserer Begriffe mit dem Objekte.* These two definitions stress, respectively, the intellectual spontaneity and the receptivity involved in knowledge.

Chapters IV-VI are devoted to an interpretative analysis of the three stages of knowledge as conceived by Kant: "*So fängt denn alle menschliche Erkenntnis mit Anschauungen an, geht von da zu Begriffen, und endigt mit Ideen.*" Chapter IV, on "*La réalité sensible selon Kant,*" takes the first clause as its motto. Professor Sentroul discusses in turn Kant's doctrine of the existence of an outer world, and his refutation of idealism; the way in which knowledge borrows an element from the outer world; and the contrast between Kant's doctrine of sensation and the Aristotelian. Both Kant and Aristotle demonstrate the existence of an outer world in essentially the same manner: my consciousness reveals me to myself only in my acts, which always imply some sense-impresssion, thus demanding as a cause the external ' thing ' (p. 157). But, in the case of Aristotle, this proof is not inconsistent with the fundamental thesis of his system; while in Kant the principle of causality, defined as a category of the understanding valid only within experience, is illegitimately used to

establish the existence of 'things' which are by definition outside of experience (p. 164 ff.). As to the part which sensation plays in knowledge, Kant and Aristotle agree in recognizing the collaboration of the senses and the intellect, but they differ fundamentally in the function which they assign to the two in this collaboration. Aristotle's doctrine of sensation is connected with his doctrine that soul and body are form and matter of the same substance: in all cognitive synthesis the soul-reality uses its passive-active functions in order to comprehend the unity of the real object. Kant, however, would reject any such factual co-ordination of the senses and the intellect in the knowledge-process. The senses, he maintains, furnish only the necessary material for knowledge, which is not 'known' at all until it has been 'informed' by the *a priori* intuitions of space and time, and does not truly become knowledge until it has been conceptualized by the understanding.

The fifth chapter is entitled "*Le concept a priori selon Kant et la synthèse expérimentale.*" How does the knowing subject systematize its knowledge data? How can science be universal and necessary, when the perceived fact is isolated and contingent? The author discusses first Kant's structure of science, taken subjectively as a psychological phenomenon, and then its objective value. Comparing Kant's doctrine of the categories with the Aristotelian, he finds an essential difference between them. Aristotle's categories are the supreme predicates of the real: they are half-logical, half-ontological. Kant's table is one of purely logical concepts, paralleling the twelve functions of the judging intelligence. Instead of Aristotle's *Nihil est in intellectu quod non prius fuerit in sensu*, Kant would say *Nihil est in sensu, et in intellectu, quod non prius fuerit in intellectu.* As regards the objective value of science, Kant certainly regards conceptual knowledge as objectively valid,—to be sure, only within the limits of possible experience. The very conditions which make conceptual knowledge necessary make it objective. The principles *a priori* which make objective knowledge and experience possible are indeed the very laws of nature, capable of being known *a priori.* This is Kant's 'transcendental idealism,' which he regards as synonymous with 'empirical realism.' Professor Sentroul calls it also "intellectual positivism" and thinks it demands a metaphysical complement.

To the metaphysical Ideas of Kant the sixth chapter is devoted. Kant's metaphysics is not an afterthought; incontestably and from the very start his intention was to put moral truths beyond the reach of scepticism, and his *Critique* is indeed a preamble to his metaphysics.

But science is experimental; metaphysics is not; it deals with the unconditioned, the absolute,—with concepts comprehending the collective unity, the totality of all possible experience, totality which, as such, is not itself possible as experience. And since all knowledge is knowledge of experience, the trans-experiential character of the metaphysical sphere makes its truths not known truths but truths of faith. Can metaphysics, then, be in any sense objective? This question, which speculative metaphysics can only recognize, the metaphysics of morals answers. Thus an objective metaphysics is obtained through the fusion of speculative and practical reason. The reality of things, a postulate for science and a hypothesis for speculative metaphysics, becomes for practical reason a thesis: it assures to man what speculatively can be only entertained. Hence the primacy of practical reason. To be sure, Kant wished to establish a close cohesion between science, metaphysics, and morals; but has he really established it? Professor Sentroul finds the radical vice of Kantianism to be epistemological dualism. For Kant the two parts of the knowledge total, the experimental-phenomenal and the dogmatic-moral, are independent: each complete in its sphere, and yet each incomplete, involving as it does the other. What he actually has, however, is not two realms of truth, but rather two orders of knowledge, neither of which satisfies all the demands of truth. If we stress the objectivity of truth, we find its model in experience; if we stress truth's normality, we find truth *par excellence* in metaphysics and morals. And we cannot take moral truth by itself and assert that it at least is in its own realm absolutely true; for the certitude of the practical order perishes along with *the* certitude of the theoretic order; for certitude as such and truth as such are theoretic (p. 281). Kant proclaims that knowledge is union, organization,—yet he ends by establishing radical differences and a barren divorce between all the modes of knowledge. He ends in the very disorder he wished to avoid. He begins with *nihil est in intellectu quod non prius fuerit in sensu;* he ends with the distinction between the sensible and the intelligible world. There are two parts in Kant's system, as Secrétan says: "*une science qui n'est pas vraie, et une vérité qui n'est pas sue.*" And this contradiction between Kant's speculative subjectivism and his moral dogmatism, touches the very heart of the Critical philosophy, even the purely speculative part. Renouvier has pointed out this contradiction in the distinction between the two faculties of the understanding and reason: the one knowing the phenomenal order, the other conceiving the noumenal.

The title of the last chapter (pp. 289–326) "*La science métaphysique selon Aristote*," suggests the contrast which Professor Sentroul draws between Kant's epistemological dualism and the unity in which Aristotle's system organizes the different branches of knowledge. Kant asks: How are synthetic judgments possible *a priori*? Aristotle's epistemological theory is the answer to a different question: How are judgments made effectively? What is the structure of judgments? Kant does not understand that all knowledge is expressed precisely by the verb *to be;* hence analytic judgments are for him vain tautologies. In the synthetic judgments, accordingly, the verb *to be* must signify, not a mental identification, but a connection. For Aristotle, on the contrary, all judgments are extensive; in all the copula indicates an identification. To know a thing is to recognize it for what it is, to see it identical under two different aspects. Judgments are classified by Aristotle, then, not according as they are extensive or not, but according as the knowledge of the identity expressed by them has its origin in the mere analogy of notions, or in the examination of existent things (p. 305). Aristotle's science of Being is a metaphysic systematic and rigorous, freed from mythology of any sort, and in contact with sense reality. For him these two, science and metaphysics, are homogeneous; both deal with the same reality, Being, although in different ways. The two coöperate; they need no reconciliation. What metaphysics says of Being, physics applies to bodies. This is the meaning Professor Sentroul reads into the expression: "Metaphysics has immaterial Being for its object," *i. e.*, metaphysics occupies itself just with Being, without considering its material aspects. Thus "not only is Aristotle's philosophy true, but it also best realizes the definition of philosophy as the science which achieves the unity of knowledge" (p. 321).

Professor Sentroul's conclusions can scarcely have caused him any surprise. At no stage of his work does his study of Kant appear to have affected his confidence in the Stagirite whom he champions so ably. To be sure, this work is no mere eulogy of Aristotle and St. Thomas; Professor Sentroul's point of view is catholic, but in both senses of the term. Indeed the very character of his conclusions makes his book of perhaps greater interest to the average philosophical student of today, whether he be orthodox Kantian or not. In all fairness, however, we must say that his account of Kant is less liberal and more insistent on literal accuracy and textual justification than his account of Aristotle. While Professor Sentroul appeals with equal confidence to the text of Aristotle and St. Thomas and quotes more

recent commentators whose views support his own estimate of Aristotle's theory, he is nevertheless ready, whenever his own interpretation of that theory lacks direct textual proof, or differs from the traditional view, to appeal to the spirit of Aristotelianism to which he always professes loyalty. Tradition has summed up Aristotle's conception of truth in the formula *adaequatio rei et intellectus*, which he finds unwarranted textually. But the formula he himself proposes: the conformity of judgment with a real identity, also lacks the support of Aristotle's text. Professor Sentroul adopts it nevertheless "*au nom de son esprit*" (p. 61). Leaving out of account for the present the validity of this particular interpretation of Aristotle's theory of truth, we readily recognize that, in an interpretative analysis of a system such as the Aristotelian, loyalty to its fundamental spirit is more important than mere textual adherence.

But Professor Sentroul's procedure is not equally commendable when, looking as he does throughout for the spirit of Aristotle, he nevertheless shows himself so ready to slight the spirit of Kantianism because of Kant's letter. Too much is he concerned with Kant's writing, too little with Kant's thought. He insists that Kant does actually psychologize in his notions of laws of thought, even though he admits that Kant does not *intend* to psychologize. Repeatedly he grants that Kant's real intention was to describe knowledge as an organizing process (*savoir c'est unir*). But he almost taunts Kant with the failure of his pen to meet the high demands of his spirit. His description of Kant's actual epistemological performance as irreconcilably dualistic is not the less condemnatory because he recognizes that Kant's fundamental epistemological ideal was experiential monism. In brief, Professor Sentroul gives us a liberal interpretation of the spirit of Aristotelianism, the deep meaning that it *can* have in our modern life, comparing it, not with a similar interpretation of Kant's inquiry and the implications of his problems, but rather with the shortcomings of Kant's actual record. Such a comparison can not but lead to an inadequate estimate of Kant. A philosopher wins immortality more often because of his questions than because of his answers: and of no one else in the history of thought is this truer than it is of Kant. Professor Sentroul reads the meaning of Aristotle in St. Thomas as well as in Aristotle's own text. In seeking the meaning of Kant, he should have shown a similar ability to pass beyond the textual frame of the *Critique*, and learn from the 'Holy Ghost' in Kant which spake in Fichte and in Hegel, not to mention other idealists.

The reviewer does not have at his present disposal the space neces-

dary to show that Kant's actual text does not lead to quite as hopeless a dualism as Professor Sentroul believes. Thing in itself, noumenon, and transcendental object are not necessarily synonymous to Kant, and a realization of the distinctions between the three is highly significant in understanding Kant's actual conception of the relation of knowledge to reality,—a point that Professor Sentroul might well have taken further into account. But, even granting that Kant's initial account of sensation, coupled with his phenomenalistic epistemology, do demand a twofold noumenal metaphysics with a resultant irreconcilable dualism, still a condemnation of Kant on the basis of a recital of these facts is scarcely a satisfactory procedure. The notion of knowledge and of reality alike in terms of experiential organization is the cornerstone of the Critical philosophy. The establishment of this cardinal truth is Kant's greatest achievement as, on Professor Sentroul's own admission, it was Kant's fundamental aim. But Kant was a pioneer, in many ways still a son of the old philosophic order, and the two *Critiques* contain much that is out of accord with the experiential monism of the true Kant. An interpreter of Kant may not overlook these echoes of Wolff and of Hume, and the newer confusions into which the formal Kant is led because of his inability wholly to free himself from the old confusions. But these occasionally fantastic doctrines should be recognized for what they are, excrescences for which allowance must be made, not fundamental doctrines whose untenability vitiates Kant's entire procedure. True enough, there is the Kant whom Professor Sentroul has portrayed for us, the hopeless dualist; there is also Kant the experiential monist. The two are indubitably incompatible. Professor Sentroul has emphasized the former, all but losing sight of the latter. Far more truly could he have vindicated the latter by showing his incompatibility with the former. The fact that Kant's abandonment of his own epistemological principles leads him into metaphycical puzzles is a proof, not of the untenability of his epistemology, but of the necessity to apply its principles even more thoroughly than Kant himself actually does. Kant is to be criticized, not for having failed in his method, but for not having trusted it sufficiently. The history of post-Kantian idealism manifests the progressive recognition of this truth and the completion of Kant's real work: the interpretation of knowledge and reality in terms of organic experience and intelligibility, a system which unites epistemology and metaphysics instead of tearing them asunder.

Kant's pen is all too frequently a poor vehicle,—a fact he doubtless recognized when he asked us not to read his book but to think it.

Professor Sentroul has given us a keen comparison of the spirit of Aristotelianism with the letter of Kant, and his conclusions are significant indeed. They would have been far more significant had he undertaken a comparison of the spirit of Kant with the spirit of Aristotle.

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NOTICES OF NEW BOOKS.

Three Studies in Current Philosophical Questions. By E. H. GRIFFIN, K. DUNLAP and A. O. LOVEJOY. [The Johns Hopkins Circular.] The Johns Hopkins Press, 1914.—pp. 99.

These Studies by members of the philosophical faculty of Johns Hopkins University are presentations of topics that are more or less prominent in current discussion. The first paper, by Professor Griffin, is on the topic, *Some Presentday Problems of Philosophy;* the second, by Professor Dunlap, is on *Images and Ideas;* and the third, by Professor Lovejoy, is entitled, *On the Existence of Ideas.* All of the papers are marked by a pleasing clarity and ease of style, and deal with present-day problems in a vigorous and stimulating way that abundantly repays a careful reading.

In the first paper Professor Griffin reviews the types of thinking that make the strongest bid for recognition on the part of the philosophically minded public. To the common sense man realism, as the doctrine that objects exist independently of our thinking, has obvious attractions. The difficulties, however, that are raised by the relativity of sense-perception has brought about a transformation of the old realism into the 'new' realism of the present day. This transformation has come about in connection with a revision of the doctrine of consciousness; but the realist has not as yet succeeded in making consciousness quite as 'external' to its objects as the doctrine of independence demands. Some objects appear to be plainly dependent on consciousness, and even those which are indubitably independent in some sense are so intimately bound up with meanings that the meanings must be regarded as constitutive. The doctrine of pragmatism is in no better case. Its attempt to eliminate representationism is a failure. Consequences may within very restricted limits be employed as a test of truth, but truth itself is a correct representation of its object, and need not in all cases resort to consequences, even as a test of its correctness. In this matter of consequences the writer seems to regard the pragmatic doctrine as rather obviously absurd. Since realism and pragmatism both fail us, the way seems to be cleared for absolute idealism. It avoids many of the difficulties that beset the other theories, but it is unable to cope successfully with the problems that arise out of the relation of the finite to the infinite or to banish the suspicion that the reality of time and struggle and evil go by the board. Hence "personal idealism," the doctrine that the universe consists of "a community of related selves," offers itself for our consideration. This doctrine is not subjected to criticism by the writer, save for the remark that it may place a disproportionate emphasis upon the individual. The paper accordingly concludes with the suggestion that the universe is neither the absolute monarchy of absolutism, nor the extreme democracy of personal idealism, but rather a

limited monarchy; in other words, that theism will perhaps mediate acceptably between the rival idealistic doctrines. The writer, curiously enough, passes over without any comment whatever the difficulties which have been urged so persistently against all forms of idealism and which have been chiefly responsible for the thought-movements of the present day. It may be added also that his interpretation of pragmatism is taken far too largely from James's loose and misleading treatment of 'consequences.' The criticism of pragmatism is essentially an attack on a straw man.

In the second paper Professor Dunlap propounds the heresy that images do not exist. He points out that images are quite unnecessary for knowing, since they are unable to perform the function of representing an object, unless there is an awareness or consciousness of the object to which the image is supposed to refer. But if such consciousness must be presupposed, it is plainly unnecessary to bring in an image for the sake of making such a reference possible. What is present as a basis for thought-operation is not an image, but the sensation that arises from muscular contractions. The unit of psychophysiological activity is the reflexly organized system of discharge. These units, as Professor Dunlap shows in interesting detail, become variously interconnected; and our experiences vary in a point for point correspondence with the variations in the total response. These responses produce muscle-sensations, which are the only direct content of thought, the indirect object being that which is thought about. Thought, in other words, is transcendent, since it surmounts the limitations of space and time. In a thought process the only discoverable constituents are muscle-sensations and the absent object. In our introspections, however, we do not always take these muscle-sensations at face value, but tend to refer them to the mode of activity that is concerned. If the muscles of the eye are involved, we are disposed to think that a visual 'image' is present, since this form of activity has to do with visual qualities.

The third paper, by Professor Lovejoy, comprises nearly sixty pages, and is much the longest of the three. It is concerned mainly with the view that "no such things as sensations or ideas, as non-physical entities, exist at all" (p. 52). This view holds that consciousness is incapable of having any special kind of content of its own; a contention with which Professor Lovejoy disagrees. His discussion is in the main a careful and searching criticism of neo-realistic views of consciousness, but limitations of space permit no detailed exposition. That experience presents no such 'inner duplicity' as to make of consciousness a distinct content accessible to introspection is conceded by Professor Lovejoy. The neural machinery, however, that is involved in perception and the facts of illusion, hallucination, etc., are held to necessitate the belief in an order of fact that is generically different from the physical order in three-dimensional space. The view that consciousness is behavior fails to give proper consideration to the fact that behavior is a matter of muscular contractions and is thus confined to the experiencing organism, to the exclusion of objects. Professor Dunlap's contention that muscular sensations are the sole content of consciousness is unworkable because it does not

account for illusions and also because there seems to be no remainder to be identified with thought, after we have abstracted the muscular sensations and the absent object. Professor Lovejoy also makes some suggestive remarks on certain confusions in the concept of consciousness, by way of accounting for the present reaction against earlier views of consciousness; and he points out that some of the main realistic arguments are borrowed from the idealism against which they are directed. His own conclusion is indicated by the closing remark: "I can not think the hypothesis of ideas—of non-physical and non-objective entities, which are in some instances capable of affording a mediate acquaintance with entities not themselves—to be in quite so forlorn a case as many acute and ingenious philosophers of our time suppose" (p. 99).

While the last two papers present some important differences, these differences seem less important than their agreement. The chief defect in Professor Dunlap's excellent essay, as the reviewer is disposed to think, is not that it is too radical, but that its radicalism is not maintained consistently. Although the author takes exception to the evidence of introspection in behalf of images, his objection is not based on the ground that this evidence involves a highly questionable assumption, but rather on the ground that careful introspection reveals muscle-sensations instead of images. It is much to be feared that no decision is possible along these lines. In making the same assumption as other introspectionists, Professor Dunlap precludes the possibility of a decision, for the reason that the issue itself is thoroughly artificial and beyond the reach of any intelligible criterion. The important question is not whether images or muscle-sensations are the content that is 'really' present, but whether it is permissible to raise such a question at all. It assumes the presence of a psychical existent which conceals its true nature from everybody, save an occasional introspectionist. The muscle-sensations are present, according to Professor Dunlap's view, but we generally overlook them completely. The time seems to have come to insist that our psychological friends translate these cryptic utterances into plain English. Do they mean that certain existences are present 'in our minds' and are yet wholly unconscious? If this be intended, what is meant by "in our minds," and how does such existence differ from non-existence? And is the fact that I can feel the operation of a muscle by attending to it conclusive evidence that there is a 'muscle-sensation' even when I do not attend?

The reason why Professor Dunlap retains these hypothetical sensations, the presence of which must be assumed even when it is least suspected, is presumably that these sensations or some similar material is demanded by a postulate which he adopts, apparently without critical examination. This same postulate underlies Professor Lovejoy's penetrating analysis and renders invalid his conclusion. This postulate is expressed in the contention that thought transcends space and time, an assumption which, as here used, introduces a conception of thought that is a heritage of former speculation and very much open to question. It assumes that if I think of the events of yesterday or of last week, there is a something called thought which is a

present existence but which possesses the marvelous power of reaching back across the intervening stretch of time to what is past and gone. This may be a correct version of the facts, but it can hardly claim self-evidence. With regard to space-relations, for example, a thought of this kind is assumed only if the object does not happen to be given in sense-perception. To perceive an object that is spatially distant does not require a space-transcending thought; to experience it in any other way does require such a thought. In this latter case we are required to assume a 'knower' that is spatially separated from its object—whatever that may mean. But to experience an object as 'over there,' beyond the present point of space or time, does not necessarily mean that we have to do with an epistemological relationship of knower and known. The gratuitous character of the assumption appears from the fact that no such knower seems to be needed in the case of sense-perception. And it is solely in order to furnish this knower with standing-ground in the present that recourse is had to muscle-sensations or images as a present content. The fact, however, that a past event is experienced now is surely no proof that any such astonishing feat of transcendence has taken place. The experience of the past is scarcely made easier of comprehension by converting it first of all into present fact and then proceeding to recover the pastness by an act of transcendence which, since it overcomes time, attempts the miracle of being both timeless and an act or process; and which incidentally makes the truth-problem an inscrutable mystery. In this form the problem of transcendence is a wholly fictitious problem. How we are able to experience the past is exactly the same problem as how we can experience anything else. But whether one agrees with the authors or not, the closeness of their reasoning and their skill in presentation entitle this issue of the *Circular* to the serious attention of all who are interested in the topics with which it deals.

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La Morale et l'Intérêt dans les Rapports individuels et internationaux. Par J. Novicow. Paris, Félix Alcan, 1912.—pp. 241.

According to M. Novicow the terms self-interest and morality are identical, and there is no real antagonism between them. Only such conduct is moral as produces pleasure. The individual has no duty to society, he has only one duty: the duty to be happy. There is no need of the smallest atom of love of neighbor to establish morality on the firmest basis. The altruistic idea is not only useless but baneful. All this sounds like an overture to a Nietzschean *Umwertung aller Werte* and the repudiation of the morality of altruism. But the author does not "teach the overman" and the overthrow of the golden rule; the doctrine that might makes right has no charms for him. He accepts the traditional morality, but he finds its *raison d'être* in self-interest instead of in disinterestedness, rejecting "the insupportable and revolting paradox that the end of morality is the evil of the individual, hence his suppression, the non-being." The basis of morality is absolute respect

for the rights of the neighbor; but it is not from love of one's neighbor that one ought to respect his rights, but from love of oneself.

It is to one's interest to behave oneself; immorality is, after all, a mistake, a miscalculation of interests. "There is no *real* antagonism between buyers and sellers. . . . Every time a laborer uses violence to obtain a higher wage than the natural market-price, he robs himself. . . . The interest of the employer and that of the laborer are identical." Similarly, the idea that we can enrich ourselves more quickly by robbery than by work is false; the fact is, we enrich ourselves in the quickest way by scrupulously respecting the rights of the neighbor. "Evil does not come from each one's pursuing his own interest (life would be impossible without that); properly speaking, evil comes from one's not pursuing one's interest." When we violate the moral rules we are acting contrary to our interests; we are simply foolish, ignorant, incapable of seeing things from any but a narrow, personal point of view.

The same remarks apply to international morality. Bismarck did wrong in annexing Alsace-Lorraine,—not because he failed to consider the happiness of France (altruism), but because he did not consider the happiness of Germany (egoism). If Bismarck had seen clearly, he would have understood that greater harm would come to Germany from the effect of his action on the French people than good to Germany from the annexation of French territory. Olliver called Bismarck *un barbare de genie*. He was a barbarian, according to M. Novicow, because he acted harshly, because he had no regard for any one's rights and considered only his narrow and personal point of view. But he was not a genius,—*barbarian* and *genius* are contradictory terms,—for the simple reason that he acted immorally, that is, contrary to the interests of his own people. Genius is the capacity to see the most distant horizons and to attain the highest conceptions of the human spirit. When in 1890, after the failure of Baring Brothers, the Bank of France came to the assistance of the Bank of England,—at a time when France and England were not on good terms,—it was because the governors of the Bank of France comprehended the real interests of their institution. The sole difference between the governors of the Bank of France and the German government is that the former understood their true interest while the latter did not. When the political leaders of Europe understand their own interests as clearly as the financiers understand theirs, the European federation will become a *fait accompli*.

M. Novicow's attempt to rehabilitate the old philosophy of enlightened self-interest is characterized by clearness, simplicity, and directness, and there is nothing in the *practical* teachings of the book with which the most humanitarian moralist of our times will find fault. Unfortunately, however, the argument on which they are based is fallacious: enlightened self-interest, as M. Novicow conceives it, does not justify our traditional morality. It is true that if there were no such thing as theft, there would be no chains, no strong boxes, no fortresses, no breast-plates, no policemen, no lawyers, no judges, no soldiers, no marines, and so forth; and if all men were liars and

robbers and murderers, the social structure would fall to pieces and there would be a diminution of wealth, happiness, and welfare. It is true that the individual's chances of success and happiness would be diminished in a disordered society, that immorality as a universal law of life would defeat the very object of life. And it may be said, *in general* it is to the interest of the individuals of society to care for the public good. But it does not follow from this that the interest of this or that particular individual, in the sense of his pleasure, will be in every case, and so long as he lives, identical with the public happiness. If everybody behaved as certain captains of industry are said to have behaved, society would sink to the level of the primitive horde: in injuring others we (as a group) would be injuring ourselves (as a group). But the individual captain of industry who has succeeded in defrauding others without being found out can hardly be said to have damaged himself, to have diminished his pleasure-returns, to have robbed himself in robbing others. It may be true, as M. Novicow says, that it is not to the interest of judges *as a class* to sell themselves because judges receive the best treatment in countries in which judges do not sell themselves. But it may be to the interest of a *particular* judge to sell himself, nonetheless, in the sense that wealth will mean happiness for him personally; and the treatment of judges as a class may be a matter of perfect indifference to him. Only in case the judge is interested in something other than his own pleasant thrills can it be said to be to his interest to be honest. It is to the individual's real interest to be good, to respect the rights of his neighbor, provided we mean by his interest disinterested interest in others, provided we enlarge the notion of his self in the way in which philosophers like Green enlarged it. There is meaning in the statement that self-interest and morality are identical; but not in the sense that the particular thief is really robbing himself because if everybody followed this method of getting rich quickly, no one would get rich quickly. From the premise that universal theft destroys the welfare of the group it does not follow that a particular successful thief in a group in which theft is not universal will be unhappy.

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Ethik. Eine Untersuchung der Tatsachen und Gesetze des sittlichen Lebens. Von WILHELM WUNDT. Vierte umgearbeitete Auflage. Drei Bände. Stuttgart, Verlag von Ferdinand Enke, 1912.—pp. xii, 304, iv, 306, iv, 360.

The fourth edition of Professor Wundt's *Ethics*, which was first published in 1886 in a single volume, comprises three stately volumes, dealing respectively with the "Facts of the Moral Life," the "Development of the Moral World-Views," and the "Principles of Morality and the Departments of the Moral Life." The second edition (1892), from which an English translation was made (1897–1901), did not differ materially from the first; but the third edition, which appeared in 1903, underwent important changes, the part tracing the development of the systems of ethics having been almost entirely rewritten, and the sections on the will, the moral motives, the moral

ends, and the moral norms having been revised to meet the modifications in the author's doctrine of the will. There has been no change in Professor Wundt's general point of view so far as this fourth edition is concerned; but a partial revision of the work seemed desirable to him on the ground that a system of ethics which proceeds from the facts of moral life and the development of ethical conceptions, and aims to discover the principles of an ethics that is to be both empirical and normative, cannot ignore the advances made in special allied fields. In his opinion, a system based on the facts has an advantage over a purely speculative one: the conceptions of the moral life and the norms governing it being a product of historical evolution, ethics itself is subject to the universal process of development which all scientific labor undergoes. It is true, no new discoveries are made in the field of ethics such as are possible in the natural sciences and may lead to a complete revolution of theory. Nevertheless, ethics may profit by what ethnology and history learn concerning the moral phenomena of the present as well as of the past; new knowledge may be acquired here at any time which, though it can never alter the foundations of our own ethical convictions, may yet change our notions as to how these ideas have been developed and in this way have a bearing upon the basal theoretical problems of ethics. We must, therefore, pay attention to the results which have been reached by the new *Völkerpsychologie* with regard to custom, myth, and religion, or, where the conclusions are still in doubt, we must take a stand with respect to pending problems. In order to bring his own work into agreement with the latest results in the study of the relation of morality and religion, of religion and myth, the origin of the family and society, and similar questions, Professor Wundt has carefully revised the portions in the first volume of his new edition dealing with these topics. He does not believe, however, that the new knowledge has rendered inadequate the general ideas advanced in his *Ethics;* indeed, he finds that, occasional corrections apart, many of the views formerly offered by him as conjectures have been verified and supplemented by a profounder study of the *Völkerpsychologie.*

FRANK THILLY.

CORNELL UNIVERSITY.

An Introduction to Kant's Critical Philosophy. By GEORGE TAPLEY WHITNEY and PHILIP HOWARD FOGEL. New York, The Macmillan Co., 1914.—pp. viii, 226.

To remove needless obstacles from the path of the undergraduate who is seeking an acquaintance with Kant's critical philosophy for its own sake and not because of its bearing upon some special subject or problem, is the aim of the authors in this volume. To this end they have prepared a statement of the *Critique of Pure Reason,* following for the most part the Max Mueller translation. In this statement they have been able greatly to abbreviate the original without interfering with the progress or intelligibility of the argument, and also to omit many of the wearisome technicalities connected with Kant's division and sub-division of his subject-matter. Words of

comment and explanation appear from time to time; they are introduced sparingly and judiciously, however. The authors' original contribution consists chiefly in the excellent, although brief, historical introduction and a ten-page exposition of the significance of the Kantian standpoint, which is appended to the Deduction of the Categories.

The authors deserve praise for avoiding over-simplification; they have not attempted to make Kant easy for beginners or to write his philosophy in words of one-syllable. But to recognize this as a merit in their work is to furnish ground for possible doubt as to its value. Will such a statement, following with fidelity the order and even the phraseology of Kant's work, prove much more intelligible or attractive to the student than the original in a translation like that of Max Mueller? Certainly, it is the exceptional undergraduate who would give the time and effort required to master either. Such an exceptional undergraduate—to say nothing of the graduate student—might, it would seem, prefer to acquaint himself with a classic like the Critique of Pure Reason in its original form. Whatever one may think of the practicability of such an undertaking one must agree that in the present case the work has been well done. The authors, with the coöperation of the publishers, have produced a well-arranged, clearly printed, and easily handled little volume. Perhaps the quality last-named is its chief virtue—its very compactness, in contrast to the bulk of the original work, is inviting to the student and will encourage him in an effort to grasp its meaning as a whole and to discover the vital relation of its constituent parts.

HENRY W. WRIGHT.

LAKE FOREST COLLEGE.

Maine de Biran. Critique et Disciple de Pascal. Par A. DE LA VALETTE MONBRUN. Paris, Libraire Félix Alcan, 1914.—pp. v, 322.

Although the name of Maine de Biran stands as the title of this volume, one is tempted to treat it as a work on Pascal, for the book, as the sub-title suggests, is a study of the influence of the latter upon Biran, involving not only a sketch of Pascal interpretation at the hands of Voltaire and Condorcet, but also an elaborate paralleling of the thoughts of the two thinkers upon the main points of philosophic doctrine, so that the effect is rather to throw into relief the ideas of the master than to emphasize those of the disciple. The difference in the intellectual power of the two men contributes to the same effect, though this difference appears unfortunately not quite so sensible to the author as one could wish. At any rate, the appearance of the book is fresh evidence of the present profound interest of the French in the personality and ideas of the seventeenth century genius.

The material used is largely the *Journal intime* of Biran, in which his spiritual development is recorded from the time of his youthful interest in Pascal, through the period of his alienation from him under the influence of the eighteenth century, down to his return to him and his last years in the Catholic communion. Only part of this material has been published and the author has done good service in drawing upon it for his purpose. Besides

this he has given us the annotations made by Biran in his copy of the Raynouard edition of the *Pensées*, which embody criticisms both of Pascal and of the Voltaire-Condorcet attitude toward him. The book also contains a partial bibliography of the Biran manuscripts and of his published works.

The results of this study are summarized in comparative statements of the doctrines of the two authors as to human nature, the social order, the sources of religious belief, the foundations of Christianity, and mysticism. In his exposition of Pascal, especially of the vexed point of his scepticism, the author follows the recent interpretations of Strowski and Boutroux, but tends to minimize unduly the Jansenist element in his thought and make it consistent with orthodox Catholicism. In similar spirit he commends Biran in his softening of the harshnesses of his master's ideas and in his less dualistic view of the relation between nature and grace. This is, of course, to ignore the spiritual tragedy of life as Pascal saw it, and to make unmeaning the agonies of his religious experience. And in general this is the impression we get of Biran's position, that it is an unsuccessful attempt to philosophize the teachings of his predecessor and to do what he had declared impossible, unite Stoicism and Christianity. No satisfactory theoretical solution of this problem being possible, there remained only the practical recourse of the Stoic's entering the Catholic Church. This he did, but unfortunately failed to realize that he had not wholly left his Stoicism behind. Our author also fails to realize this fact clearly but, nevertheless, he has given us materials for the study of a religious development which it is well worth while to understand.

NORMAN WILDE.

THE UNIVERSITY OF MINNESOTA.

Le Dieu de Spinoza. Par GABRIEL HUAN. Paris, Librairie Félix Alcan, 1914.—pp. 338.

This is an astonishing revival of the theory that Spinoza's metaphysics is a flawless deduction. The system is defended not because of its fruitfulness for modern thinking but because its logic is invulnerable. Grant Spinoza the premise of a combination of Substance and Cause and from this flows in "an immanent procession" the modal world in all its diminishing degrees of perfection. The author has not only followed in detail the famous discussions of vexed problems, such as the compatibility of an indeterminate substance with an infinity of inhering attributes and with a differentiation into modes, the meaning of the eternal life, of the fixed and eternal things, of the *idea ideae*, of the *infinita idea Dei*, and proposed a solution in harmony with the system as a whole and Spinoza's express utterances, but he has also refuted with considerable plausibility traditional attacks upon the system which have long been considered unanswerable. Notably, he upholds Spinoza in his defense of himself against Tschirnhausen in the assertion of an infinity of attributes when only two are humanly known, and in the derivation of bodies with figures from the figureless attribute of extension.

It is to be said in favor of the author's manner of treatment that a sym-

pathetic study, even if over subtle, is always suggestive. On the other hand, this skilful defense succeeds partly by ignoring those questions which are now most vital, *viz.*—were Spinoza's assumptions and method sound. The book contains valuable summaries of the Spinozistic literature on particular points, *e. g.*, that of the various interpretations of the mathematical method in the footnote on page 31. Thirty-one pages are occupied with a Spinozistic bibliography.

KATHERINE EVERETT GILBERT.

Spinoza's Stellung zur Religion. Von GEORGE BOHRMANN. Giessen, Alfred Töpelmann, 1914.—pp. 81.

The gist of this book is the contention that in the *Theologico-Political Treatise* Spinoza misrepresents his real attitude toward revealed religion. Although Spinoza's task is merely the exegesis of a material which he takes as given, he nevertheless seems to accept the point of view of revelation as valid. But Spinoza's real opinion, the author asserts, was that supernaturalism is inconceivable. His least convincing argument is that this misrepresentation was due to timorousness and diplomacy on Spinoza's part. The key to the whole treatise is 'accommodation at any price." Of course, any such assignment of motive must be in the last resort conjecture. But the interpretation of Spinoza as timid and artful, while made plausible by isolated instances and statements, seems more like an interesting reaction from the traditional extreme admiration for Spinoza's fearlessness than an appreciation of his utterances in the complete context of his life and writings. Moreover, this solution of the problem of the *Theological Treatise* only creates a new problem in regard to Spinoza's personality, for with his recognized courage and sincerity must be harmonized these opposing qualities. It is more probable that the inconsistency of his concessions to revealed religion sprang from an intellectual rather than a moral short-coming; that is, he did not always think out adequately the implications of his position.

The Appendix, on "Spinoza in England" (1670–1750), the most exhaustive study yet made of that subject, shows that English philosophers either ignored or wholly misunderstood Spinoza until the time of Coleridge.

KATHERINE EVERETT GILBERT.

Histoire de la Science Politique dans ses Rapports avec la Morale. Par PAUL JANET. Ouvrage couronné par l'Académie des sciences morales et politiques et par l'Académie française. Quatrième edition revue d'après les notes laissées par l'auteur et précédée d'une notice sur la vie et les travaux de Paul Janet par G. Picot, secrétaire perpétuel de l'Académie des sciences morales et politiques. Deux tomes. Paris, Félix Alcan, 1913.—pp. ci, 608, 779.

The fourth edition of the classical *History of Politics* first published by Paul Janet in 1858 under the title, *History of Moral and Political Philosophy*, has been revised on the basis of the notes left by the author and contains a preface with extracts from Georges Picot's excellent account of Janet's life and works

which appeared in 1903. The work practically stops at the year 1789, with a short chapter on the publicists of the American and French Revolutions (vol. II, pp. 693–727); but there is a good analysis and *résumé* of the *Declarations of the Rights of Man* in France and America (Introduction to the third edition, vol. I, pp. v–lxxiii), and a brief Conclusion (vol. II, pp. 727–743) giving a meagre outline of French political thought in the nineteenth century and a scant note on the political literature of England and Germany of the same period. It is a pity that the author did not carry out his intention of publishing a third volume, during the years which intervened between the appearance of the third edition (1887) and the date of his death (1899), and bring his history down to the end of the nineteenth century. We have, however, a number of preliminary studies from his pen covering phases of the period in question, among them the following: *La philosophie de la révolution française*, 1875, *Histoire de la révolution française*, 1889, *Les origines du socialisme contemporain*, 1883, *Saint-Simon et le Saint-Simonisme*, 1878, *Babeuf*, the article *Tocqueville* in *Problèmes du xix siècle*, and two articles in *Revue des Deux Mondes: Charles Fournier*, 1879, and *Introduction à la science morale d'Herbert Spencer*, 1875.

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The following books also have been received:

Greek Philosophy. Part I. Thales to Plato. By JOHN BURNET. London, Macmillan and Company, Limited, 1914.—pp. x, 360.

Our Knowledge of the External World As a Field for Scientific Method in Philosophy. By BERTRAND RUSSELL. Chicago and London, The Open Court Publishing Co., 1914.—pp. vi, 245. $2.00.

Henri Bergson. An Account of His Life and Philosophy. By ALGOT RUHE and NANCY MARGARET PAUL. London, Macmillan and Co., 1914.—pp. vii, 245. $1.50 net.

The Philosophy of Change. By H. WILDON CARR. London, Macmillan and Co., 1914.—pp. xi, 216. $1.75 net.

William James and Henri Bergson. By HORACE MEYER KALLEN. Chicago, The Univ. of Chicago Press, 1914.—pp. x, 242. $1.50 net.

The Idealistic Reaction Against Science. By PROFESSOR ALIOTTA. Translated by AGNES MCCASKILL. London, Macmillan and Co., 1914.—pp. xiii, 483. $3.00.

Problems of Conduct. By DURANT DRAKE. Cambridge, The Riverside Press, 1914.—pp. xiii, 455. $1.75.

Friedrich Nietzsche. By GEORGE BRANDES. New York, The Macmillan Company, 1914.—pp. 117. $.75.

Essays on the Life and Work of Newton. By AUGUSTUS DE MORGAN. Chicago, The Open Court Publishing Co., 1914.—pp. xi, 198.

The Analysis of Sensations. By DR. ERNST MACH. Revised and Supplemented from the fifth German edition by SYDNEY WATERLOW. Chicago and London, The Open Court Publishing Co., 1914.—pp. xiv, 379. $1.50 net.

A First Book in Psychology. By MARY WHITON CALKINS. Fourth Revised Edition. New York, The Macmillan Company, 1914.—pp. xxi, 428. $1.00.

An Introduction to General Psychology. By ROBERT MORRIS OGDEN. New York, Longmans, Green, and Co., 1914.—pp. xviii, 270. $1.25.

Is Conscience an Emotion? Three Lectures on Recent Ethical Theories. By HASTINGS RASHDALL. Cambridge, The Riverside Press, 1914.—pp. 200. $1.00 net.

The Philosophy of Christ's Temptation. By GEORGE STEPHEN PAINTER. Boston, Sherman, French, and Company, 1914.—pp. 333.

Life and Human Nature. By SIR BAMPFYLDE FULLER. New York, Longmans, Green, and Company, 1914.—pp. xi, 339.

Work and Wealth. A Human Valuation. By J. A. HOBSON. New York, The Macmillan Company, 1914.—pp. ix, 367.

New Proofs of the Soul's Existence. By S. S. HEBBERD. Boston, Sherman, French and Co., 1914.—pp. 86. $1.00 net.

Fated or Free? A Dialogue on Destiny. By PRESTON WILLIAM SLOSSON. Boston, Sherman, French and Company, 1914.—pp. 89. $1.00 net.

The Buried Ideal. By CHARLES LAWSON. Boston, Sherman, French and Company, 1914.—pp. 183. $1.25 net.

Truth and Other Poems. By PAUL CARUS. Chicago, The Open Court Publishing Co., 1914.—pp. 61. $1.00.

SUMMARIES OF ARTICLES.

[ABBREVIATIONS.—*Am. J. Ps.* = *The American Journal of Psychology*; *Ar. de Ps.* = *Archives de Psychologie*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Ar. f. sys. Ph.* = *Archiv für systematische Philosophie*; *Br. J. Ps.* = *The British Journal of Psychology*; *Int. J. E.* = *International Journal of Ethics*; *J. of Ph., Psy., and Sci. Meth.* = *The Journal of Philosophy, Psychology, and Scientific Methods*; *J. de Psych.* = *Journal de Psychologie*; *Psych. Bul.* = *Psychological Bulletin*; *Psych. Rev.* = *Psychological Review*; *Rev. de Mét.* = *Revue de Métaphysique et de Morale*; *Rev. Néo-Sc.* = *Revue Néo-Scolastique*; *Rev. Ph.* = *Revue Philosophique*; *Rev. de Ph.* = *Revue de Philosophie*; *R. d. Fil.* = *Rivista di Filosofia*; *V. f. w. Ph.* = *Vierteljahrsschrift für wissenschaftliche Philosophie*; *Z. f. Ph. u. ph. Kr.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Psych.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane, I. Abtl.: Zeitschrift für Psychologie.* —Other titles are self-explanatory.]

The Psychology of Magic. CARVETH READ. British Journal of Psychology, VII, 2, pp. 166–189.

The simplest and earliest magical beliefs and practices are those connected with charms, rites, and spells. They owe their origin to imperfectly observed and analyzed coexistences and sequences of events. An action that has happened to precede a successful effort is repeated in the hope that it will again be followed with success. Emotional excitement also plays its part. By introducing unreal antecedent conditions magic has hindered rather than helped the evolution of true causal explanations. The causal sequence in magic being untraceable, it appears mysterious, and the more mysterious is magic the more powerful it is supposed to be. The mere expression, however, of a wish or volition is only believed to be efficacious in late stages of the evolution of magic. Since savages clearly distinguish similarity from identity and part from whole in their work-a-day life, their apparent failure to do so in sympathetic magic must either be an acquired incapacity, due to some fixed idea or dissociation that prevents them from perceiving the facts, or else merely be a case where the customary forms of speech prevent savages from expressing clearly distinctions that really exist in their minds. In imitative magic images may first have been employed simply as a means of fixing the attention, and only later have become a substitute for the man himself. Pantomimic practices, such as bringing on rain by spilling drops of water, or leaping to make the crops grow, may best be understood as attempts to set up or reinforce currents of causation, and not as themselves directly causative. Magical practices dissolve when rites come to be considered symbolic, and when they become attenuated and memory of their original meaning is consequently lost.

W. K. WRIGHT.

A Feudal Principle in Modern Law. ROSCOE POUND. The International Journal of Ethics, Vol. XXV, 1, pp. 1–24.

Our common law—perhaps the most vital and tenacious tradition of the modern world—has absorbed much that was developed outside itself: equity rules; Star Chamber, merchant, and admiralty law; ecclesiastical law of probate and divorce, beside statutory and reform laws of England and the United States. It absorbed the jurisdiction of the church in the twelfth century, and was victorious in its struggle against Roman law. Permanent as its establishment seems to be, there is for it another crisis at hand. Three of its world-wide principles are under indictment: Its doctrine of supremacy of the law, which is the pivot of the system, is being attacked in the United States. Its commercial law is codifying. The torts of contributory negligence, assumption of risk, and the doctrine of liability as a result of fault at least as applied to employees in large industries, are in danger of extinction. The shift from the older individualistic justice to the growing social ideal of justice, the rise of executive justice, extra-judicial commissions, the substitution of administrative for individual initiative in the enforcement of law, and the failure in the popular feeling for justice at all events—all these are evidences of growth which our judicial law-makers have scarcely the leisure to meet. Two forces have hindered the influence in law of economic pressure and class interest: the development of law logically from analogies and a conscious endeavor to make law express eternal ideals. We may therefore find in legal history the bases of analogies corresponding to different legal principles. Of the factors contributing to our common law, seven of the most important are: (1) original Germanic law; (2) the feudal law; (3) Puritanism; (4) contest between court and crown; (5) eighteenth-century political ideas; (6) pioneer and rural community conditions in the first half of the nineteenth century; (7) philosophical ideas which prevailed in the formative period in which the English common law was made over by us for the American courts. Among these the one anti-individualistic element, the feudal element, has always tempered the individualism of our law. The Roman individualistic law of the will is an alien conception in our own Anglo-American law the central idea of which is relation. In one the person is held responsible for what he voluntarily undertakes or wills; in the other, for acts which a certain relation (originally that of lord and tenant) imposed. This is the principle in our law of master and servant, in fiduciary relations, and in the relation of vendor and purchaser. Our modern insurance law and the law governing our public companies have become largely relational. Especially has the nature of the relation between the modern employer and employee developed duties of relation on the part of the former. Many of this class of our laws were introduced in the court of equity and were merely moral duties made law. The Roman individualistic idea of a legal transaction, sufficient as it may have been for our early pioneer life, has proved insufficient for the life which our great industrialism has developed. We are fortunate in having retained this

feudal principle in our law as a means of solving these problems as well as the problems of the future.

A. J. THOMAS.

Nature and Reason in Law. JOHN DEWEY. The International Journal of Ethics, Vol. XXV, 1, pp. 25–32.

The synonymous use of natural, rational, and morally right is a well-known fact of legal history. Nature and reason are, however, ambiguous terms meaning (1) the existent or previously given state of things; as opposed to (2) an adjustment to desired circumstances. Hence the morally desirable and also the just may mean (1) that which commends itself to the best judgment of the most experienced, or (2) the acceptance of the given distribution of advantages, as illustrated, for example, by the *laissez faire* doctrine. In this latter sense it is an abnegation of human intelligence. This attitude was furthered by the influence of Newtonian science. Human nature is not here a unique characteristic, but becomes a mere tracing of a benevolent cosmic wisdom. Moral action under such influence merely seeks to remove an interfering intelligence from the path of nature. These two types of logic are exemplified in the court decisions relative to due diligence and undue negligence. Due or reasonable foresight may mean (1) such as would in a given situation conduce to desirable consequences, or (2) such foresight as is merely customary in that situation even though the consequences are deplorable. This latter view renders the brute situation in terms of purpose or reason.

A. J. THOMAS.

La Conscience épiphenomène. F. LE DANTEC. Rev. Ph., XXXIX, 8, pp. 113–143.

A detailed treatment of the epiphenomenal theory of consciousness is justified by the fact that the majority of those who speak of it do not seem to understand at all what biologists mean by the term. We have two sources and two fields of knowledge, one relating to things outside ourselves, the other to things within. A little consideration shows that our physical knowledge of the external world is astonishingly comprehensive, minute and accurate. This fact must prove to anyone not blinded by preconceived notions that something from the external world, certain 'documents,' as it were, have penetrated within us and become part of our internal structure, awakening modes of consciousness which copy or translate outside events. Physical excitations of sense organs and the content of consciousness vary in such closely parallel ways that it is impossible to doubt a causal relation between them. Modes of consciousness are a faithful translation of modifications in our bodily protoplasmic structure, and these in turn of external phenomena. We have then a material construction which 'knows' certain details of its own structure. This personal consciousness in a material being gives us our problem. There are many facts about its structure of which the animal or man is totally oblivious, others of which he is dimly conscious, others which

he knows accurately. The case of the last suggests that consciousness may be built up of elements corresponding to those of physical structure. The difference between structural relations known and not known seems to be a matter of habituation or normality; it is the unusual which is accompanied by consciousness. The cognition of a world continuous in space and time is based on the spatial and temporal continuity of the protoplasmic structure of the central nervous system, the temporal continuity being effected through assimilation, the characteristic vital process. Our knowledge of the world is thus mediated by our knowledge of ourselves, and our subjective self is rigorously limited to our own protoplasmic structure. Hence a dilemma confronts us: either the life process builds up consciousness out of unconscious material elements, thus creating the absolutely new, or else the elements of consciousness exist in inorganic nature. Every reasonable presumption points to the second view. But it cannot be proved to one disposed *a priori* to the contrary belief. There is no way of 'proving' the consciousness, even of one's dearest friend; consciousness is not a phenomenon, is not capable of direct or indirect detection by our sense organs. Phenomena are physical; consciousness is 'something,' not a phenomenon, and which no language therefore really fits, but which accompanies phenomena. This is what led first Maudsley and later Huxley to call it an 'epiphenomenon.' The use of this term in other senses, particularly in medical science, seems to have led to the widespread confusion in regard to it in the present connection.

F. H. KNIGHT.

The Coming Philosophy. GEORGE SANTAYANA. J. of Phil., Psy., & Sci. Meth., XI, 17, pp. 449–463.

The fundamental thesis of Professor Holt's *The Concept of Consciousness* is that consciousness is nothing but its immediate objects, which are all exactly what they would be if no one were conscious of them. These objects include terms, propositions, relations, qualities, values, and emotions. They are all universals, *i. e.*, capable of entering into various contexts without losing their identity. Professor Holt's contention that propositions generate things and deduction dominates evolution is an abuse of logic and a reversion to a Platonic sort of metaphysics. Professor Holt identifies propositions with forces, deduction with causation, and definitions with things, and deduces all existence from a few dialectical elements. But this, like his ontological hierarchy, has "a strangely gnostic air." Professor Holt rightly condemns the notion of the subconscious; but, when he speaks of 'unfelt feeling,' is he not confusing logical character with natural existence? Consciousness is not that collection of objects which secures a response from the nervous system; it is some inward difference between feeling and not feeling, noticing and not noticing, anything. Professor Holt is continually contrasting the group of objects noticed with the remainder of being, instead of contrasting awakened attention with unconsciousness. Not once in *The Concept of Consciousness* is the concept of actual consciousness broached! "To think you have composed

consciousness by collecting its objects is like thinking you have created knowledge by collecting a library." Professor Holt identifies active cognition with passive images, and the latter with material objects. But an idea is not a dead object; it is transitive, indicating an operation of the mind; it is the act of conceiving. Ideas and sensations are no more identical with their objects than shots are with their targets. The field of consciousness, not to speak of consciousness itself, is a symphony of memories, suggestions, impulses, and inventions; it is a life and a discourse rather than a cross-section of an external world. Though the Realists try to abolish consciousness and ideas by identifying them with parts or collections of objects, "they are still idealists at the back of their heads." The new American philosophy (a fusion of transcendentalism, pragmatism, immediatism, and logical realism) is perplexed by confused thinking, half-meant, random assertions, undigested traditions, uncouth diction, and words turned from their right use. Yet, it is the coming philosophy, for its spirit and contributions are modern and American: but 'coming' need not mean coming to stay.

RAYMOND P. HAWES.

Le temps en général et le temps Bergsonien en particulier. RENÉ DE SAUSSURE. Ar. de Ps., No. 55, pp. 277–296.

We may well agree with Bergson that our states of consciousness are not quantities but qualities, and that they are not measurable but only perceptible. To this we may add that whatever is subjective is qualitative, and whatever is objective is quantitative. We cannot accept, however, Bergson's distinction between two kinds of time, between Time, which is a homogeneous and void medium of the order of pure quantity, and Duration, which is identical with our inner life and consequently heterogeneous and qualitative. If space is homogeneous, says Bergson, whatever is homogeneous must be space, for we cannot conceive two homogeneities. As a matter of fact, we do conceive time and space as two distinct and independent homogeneous mediums. For two homogeneous continuums may differ from each other by the number of parameters upon which they depend. Space is a tridimensional medium, while the structure of time depends upon a single parameter. It is true that we measure time by a spatial displacement, but it does not follow that the measurable time is space. It is natural to measure time by means of movement, because movement implies both duration and extension. But time and movement are not identical things: movement is a spatial change, while time is a change of any kind, and may be measured by any regular change, for example, by a change of color. There is no real distinction between the so-called spatialized time (quantitative) and real time (qualitative). There are not two kinds of time, any more than there are two kinds of space. Time is only qualitative or quantitative according as we look at it from the subjective or the objective point of view. It is concrete or abstract according as we place it in reality or in intellection. Bergson identifies the real time with the succession of states of consciousness, and concludes that it is a

qualitative and heterogeneous multiplicity. But time is no conscious reality by itself. Time can only be the "basis on which our states of consciousness detach themselves." And that basis can only be homogeneous, neuter, and *grisâtre*. What are heterogeneous are the facts of consciousness. But time itself (the actual moment) is one and the same individuality present everywhere, in all states of consciousness and in all things. It is in this sense that time is God. Duration, says Bergson, signifies invention, creation of forms, continuous elaboration of the absolutely new. If this sentence means anything at all, it can only mean that time is the universal principle which has created and is still creating the world. In this sense, the term "creative evolution," as employed by Bergson, is fully justified.

SUH HU.

A Defence of Idealism. GEORGE TRUMBULL LADD. Mind, 92, pp. 473–488.

Mr. Ladd opposes cock-sureness and jauntiness in philosophical debate on the ground that all systematic philosophies have a common aim. The most extreme opposition, that between monistic Idealism and materialistic Realism, suffers a *reductio ad absurdum*, when the two eventually meet and fuse. Between the extremes of this opposition, agreements are found more important than differences. In order that there be discussion, each school must in some measure come over to the opposing point of view. The methods of opposing schools must also be the same, for only one method is possible, "and this is the way of rationalism, the method of reflective thinking." The opposition between the real and the ideal cannot ultimately be maintained. Every form of realism is essentially idealistic in the character of its philosophical tenets, and every idealism must take its point of departure from that which is actual in human experience. There is no purely factual experience. Ideas and ideals are facts, neither true nor false in themselves, but only as interpretations of reality. Ideals are essential to progress. No scientific law can be founded on 'mere' fact, for all laws are shot through with the ideals which are implicated in factual experience. Philosophy is therefore in its very nature some form of Idealism. How particular ideals may be made to stand together in harmony under the supreme Ideal is the perpetual problem of reflective thinking. Pragmatism and the new realism as critiques of the exercise of reflective reason may be of value, but if they would add anything to our knowledge of reality, they must become rationalistic in method, and thus acknowledge fellowship with other systematic philosophies.

D. T. HOWARD.

Die Geschichtsphilosophie Comtes u. Hegels: Ein Vergleich. F. DITTMANN. V. f. w. Ph., XXXVIII, 3, pp. 281–312.

History for both Comte and Hegel is the development of humanity as a whole. According to Comte, history as a science begins only with positive philosophy, when the development of humanity is regarded as subordinated to unchangeable laws of nature. Freedom does not consist in arbitrariness,

but in the submission to the rationality of the necessary laws. The philosophy of history for Hegel is thought dealing with necessary and rational reality. There is no freedom without the consciousness of freedom, which is only possible in an organized state, where individual wills are unified in the general objective will. Thus Comte and Hegel agree in presupposing immanent lawfulness and in regarding freedom as subordinate to necessity, but differ in the conception of law as that of natural science on the one hand, and as the dialectic movement of an Idea on the other. For Comte, the development of humanity is an unfolding of finite human nature, and will reach an absolute end when it is all evolved in the complete positive stage, just as the life of an individual is completed in ripe, old age. As the end is from the beginning present in the germ of human nature, history must rest on a hypothesis of immanent teleology, as indeed a working hypothesis is necessary for every empirical science. The orderly series of historical facts involves continuity and necessity in all the steps of social development. The conception of natural laws implies also the relativity of facts to their conditions as against absoluteness of standard of judgment. For Hegel, too, the development of humanity is an evolving of human nature, but more specifically, it is the progress in the consciousness of freedom. The same analogy of history to an individual life is used by Hegel, only more thoroughly worked out. The teleological standpoint is a guiding principle for interpreting history. The continuity of history follows from the nature of the dialectic movements. All historical events are necessary steps through which the world Spirit develops; but their values are only relative to their times. Thus Comte and Hegel agree that development is an unfolding of unchangeable human nature toward an absolute end. They both accept the hypothesis of immanent teleology. They further agree in the continuity, necessity, and relativity of the steps of development. Comte sometimes even makes all truths relative to its time. Hegel, on the other hand, holds that philosophy can give absolute truth. However, Comte has at least one absolute standard, viz. his positive philosophy. (The article is to be continued in the first number of 1915.)

YUEN R. CHAO.

Psychological Doctrine and Philosophical Teaching. JOHN DEWEY. J. of Phil., Psy., and Sci. Meth., XI, 19, pp. 505–511.

The past influence of philosophy on psychology justifies a philosopher in discussing the procedure of the latter. The two distinct realms, physical and psychical, of naïve experience and science provoke difficult epistemological questions. According to received opinion the physical world is known only through external perception, yet, on the other hand, perception cannot get outside itself, and its nature can only be known introspectively. The probability that this dilemma was inherited from philosophy calls it to the philosopher's attention. The fact that as soon as a generation of behaviorist psychologists is self-trained these traditional presuppositions will be rejected, makes philosophical criticism hopeful. In such a revision the notion of be-

havior should not reflect the traditional dualism. Behavior must refer, not alone to the nervous system, but to all human conduct. By rejecting all artificial traditional distinctions between the psychical and the physical, epistemological questions will disappear, and psychology will become a theory of actual human nature.

C. CECIL CHURCH.

Definitions and Methodological Principles in Theory of Knowledge. BERTRAND RUSSELL. The Monist, XXIV, 4, pp. 582-593.

The analysis of experience in previous articles suggests certain definitions. Subjects are the domain, objects the converse domain of the relation, *acquaintance*. Cognitive facts involve acquaintance. Epistemology defined as an analysis of true and false beliefs and of their relations, together with a search for the criteria of true belief, admits psychical and logical aspects. Data must include all particulars and universals cognized otherwise than by inference, yet a datum in a subject matter need not be obvious. The fact of its being a datum might not be a datum. As acquaintance must always be acquaintance with some object, that object must be real. Unreality may be a notion due to the possibility of describing in the subject of a sentence what is not a constituent of the proposition expressed. In dream experiences, unreality may be inferred because these objects are less intimately related to the objects of waking sensations. All cognitive occurrences giving rise to error must be other than dual relations. The epistemological order involves psychical and logical considerations but does not assume knowledge of physics and physiology.

C. CECIL CHURCH.

Objectives, Truth and Error. E. H. STRANGE. Mind, No. 92, pp. 489-509.

Mr. Russell objects to most theories of truth, on the ground that they are incompatible with the existence of error, and he attempts to elaborate a theory of judgment which will overcome this defect. Mr. Strange, with the object of illustrating his own theory, reviews Meinong's theory of Objectives, which, in agreement with Mr. Russell, he finds unfitted to deal with error. After a further analysis of Russell's theory, which also is found wanting, the conclusion is reached that Meinong's Objectives must be retained, but with modifications. Meinong distinguishes between the object judged and what is judged about the object. The one is Object, the other Objective. Belief is always concerned with Objectives, and its truth or falsity depends on whether the Objective is fact or not fact. The difficulty of the position lies in the proposition that every judgment must have both object and objective. This gives us impossible objects. Mr. Russell points out that some sort of correspondence theory must be adopted, since truth and falsity concern beliefs, not objects. Belief does not imply, however, a dual relation between what is believed and a complex external fact, since in that case false belief would have an object. Belief is a multiple relation, which unites objects in an order which may or may not correspond to their order in Reality. This multiple

relation called belief is found, however, when examined, to be so extraordinary that our knowledge of other multiple relations is of no value in enabling us to understand it. Meinong's Objective is reinstated, primarily because judgments refer to Objectives rather than to objects. Objectives, it is proposed, neither exist nor subsist, though we may speak of them as 'true' or 'false,' 'fact' or 'not-fact.' The relation between Objectives and factual complexes, which we call truth, is ultimate and indefinable.

D. T. HOWARD.

The Distribution of Consciousness and its Criteria. ROBERT MACDOUGALL. Am. J. Ps., XXV, 4, pp. 471–499.

By what criteria shall we determine the distribution of mind? We use the unique case of the exact correlation between our own minds and bodies in a sort of inductive proof for a similar correlation wherever we observe a similar body. But nature presents a series of types diverging to forms which offer no practicable ground of comparison with our bodies. If we associate mental life with specialized activities or structures, we cannot assume it throughout this series, but must formulate criteria. Do we indeed find the whole of our own physiological activity reflected in consciousness? The classical answer is that only the activity of the central nervous system is immediately connected with mind. But on this hypothesis the systematic correspondence between our own minds and bodies is uncertain, since it depends on the integrity of connections which we cannot always demonstrate to be present or absent by the only available means, *i. e.*, observation of peripheral data. By a further distinction, consciousness is assumed to accompany only those motor changes which are associated with the cerebral cortex. But the same reaction may conceivably be controlled by higher or lower centres, and so must be interpreted not according to structure but according to situation. And the presence of the stimulus to consciousness at all depends upon modifying factors such as the focus of attention. Highly complicated reactions, such as reading and writing, sometimes appear to be automatic. If their dissociation from consciousness is actual, the whole inference of consciousness from behavior is discredited; if consciousness is assumed to be present, but because of inattention irrecoverable by memory, introspection as a test is invalidated; if there is dissociation within consciousness itself, the unity of consciousness is lost. We may however study mental types rather than mental activities in general, and consider (1) the series graded from normal human beings to anencephalics, especially if the cerebrum is assumed to be the structural basis of consciousness; (2) the early developmental stages of the normal individual; (3) and the taxonomic system of living forms. In these series we find ground, on observing the differences between lower and higher forms, for predicating physical activities unaccompanied by consciousness. Four conceptions attempt to define the province of consciousness: (1) Psycho-physical correlation is held to be universal; mind and matter are alike atomic. Here limits are not considered and continuity is assumed. (2) Consciousness is regarded as dependent

on a specific grade of physical organization, usually on the brain. Thus the meaning of the term consciousness, applied to organisms like our own, is protected, while continuity, especially apparent in the development of the embryo, is disregarded. This second sort of concept includes the notion of consciousness as a peculiar type of energy. (3) Consciousness is conceived as the concomitant of general or specific modes of response to the environment. We note decrease of consciousness upon introspection of our relatively fixed reactions, and find its highest degree where definite reactions have not been secured. Variability is here the criterion of consciousness. But wide variations might appear to exist, and still be automatic within their wide and yet limited field. (4) So consciousness is predicated where the whole organism is affected by change of stimuli, *i. e.*, where there is capacity to learn from experience. Although consciousness as the mark of imperfect adaptation is in a sense self-eliminative, it is saved by the development of new situations caused (*a*) by changes of stimuli and (*b*) by continual development of the 'margin of attention.' In general we may look upon consciousness as a unity of functioning, an irreducible reality appearing at various levels. But in determining its distribution, we must think of it as a complex of processes, in terms of which, as of Sentience, Constructive Perception, Recognition, Memory, we shall attempt to describe the world.

MARION D. CRANE.

Philosophischer Realismus. DR. BERNHARD VON LUDWIG. Ar. f. sys. Ph., XX, 3, pp. 257–265.

The conviction that all human experiences (*Erfahrungen*) are facts (*Erlebnissen*) of consciousness is an essential feature of Idealism. From this it follows that no fact is isolated; all hang together in an inexplicable unity. Some arise from our own activity, others are irresistibly forced upon us; hence, the distinction between conception and perception. In its attempt to satisfy the demands of reason for a contradictionless unity, by supplementing with hypotheses the data of immediate experience, philosophy is led inevitably to the assumption of a plurality of individual conscious unities, united by a single, all-embracing conscious unity. The supposed antinomies of Idealism, emphasized by Dr. Franz Jünemann, are the result of a 'petitio principii,' or of a misuse of words, on the part of the Realist, himself. The alleged infinite regress of conceptions in the Idealistic account of perception is likewise illusory. The Realistic representative theory of perception presupposes a wholly unintelligible production of a conscious fact by a material process. Realism's supposed axiom of the external existence of a spatially extended world is simply an entirely unwarrantable hypostatization of a product of abstraction. Since dreams have all the characteristics of perception, the fact of perception is no evidence for such a world. The assumptions of Realism are not based on immediate experience and they lead to the grossest contradictions.

RAYMOND P. HAWES.

The Motive of Individualism in Religion. WARNER FITE. Harvard Theological Review, VII, pp. 478–496.

Is the spirit of a free man compatible with that worship and love of God which is implied in any genuine religion? Mr. Bertrand Russell, in "A Free Man's Worship," seems to imply that a free man's religion is necessarily a religion of self-sufficiency. The historical individualisms, as well as the modern social moralities, base their arguments on natural instinct. They have a tendency also to regard individuals as mutually exclusive spatial units, whose unification implies sacrifice, on the ground that two bodies cannot occupy the same space or swallow the same food. They overlook the essential fact, that the social relation is constituted by spiritual communion between conscious beings. The right of the individual to self-assertion depends upon his being self-conscious, and hence not a means for alien ends, but an end in himself. But while self-consciousness implies self-assertion, it does not imply self-sufficiency. It involves a consciousness of outer realities and personal needs; it is not incompatible with reverence for goodness and wisdom. It especially recognizes the need for intercourse with others as the basis of all social value. Religion is the outcome of a deeper self-consciousness. In interpreting the Universe, the individual must hold a place as *one* in the kingdom of ends. "The starry heavens above me, and the moral law within me," suggest on the one hand the vastness of reality, and on the other the self-consciousness which evaluates and gives significance to this vastness. In this universe, is self-consciousness merely a fortuitous fact, or may man seek spiritual fellowship within it? This is the problem of religion. While Mr. Russell's essay arouses sympathy for the spirit of the 'free man,' it furnishes no justification either for freedom or worship. We may assert our significance in a world of significance, but not in an irrational world.

D. T. HOWARD.

Buddhist Influence in the Gospels. RICHARD GARBE. The Monist, XXIV, 4, pp. 481–492.

The Gospel stories seem undeniably affected by Buddhist influence, particularly in four cases. (1) The story, of the old saint Asita glorifying the Child Buddha, often appearing in Buddhist literature, resembles the story of Simon; and the angelic hymn, common to both, proves the dependence of the latter on the former. (2) The story of the temptation of Jesus has three most significant parallels in the early *Pāli* literature. The particulars of both versions, temptation in solitude, etc., are too coincident to permit a theory of non-dependence. (3) The account of Peter's walking on the water seems to be borrowed from such stories as that in the *Jâtaka* where the disciple goes to the Buddha on the water, saving himself by faith. (4) In both Buddhist and Gospel accounts of miracles performed in creating loaves of bread the number five significantly occurs. Other loans are probable; but the fact of loans need not threaten Christian faith.

C. CECIL CHURCH.

The Development of Mahayana Buddhism. DAISETZ TEITARO. The Monist, XXIV, 4, pp. 565–581.

We divide Buddhism into the Mahâyâna section, centering in Northern India and China, holding up the ideal of universal salvation, and the *Hînayâna* section of the South, holding up the ideal of individual salvation. The former is speculative, and its discipline is intellectual rather than moral. It has developed many sects. It neglects the moral side, emphasized by the Hînayâna division, boldly constructing the essentially Buddhist doctrine of non-egoism. With all Buddhists, this sect denies the ego-soul as a unit behind our consciousness; but it further denies the objective world an *Ishvâra* or personal creator. This negation is the road to a higher affirmation. Here birth, change, oneness, etc., disappear. Intellection becomes intuition. In a mysterious way this higher affirmation is the source of being and love. This doctrine modifies the severity of the conception of *karma*. The world, as a single spiritual system, permits the *karma* of the good to modify the *karma* of the ignorant,—which is a doctrine of vicarious sacrifice. The ideal is the deliverance of all, rather than the salvation of individuals. But the differences are not fundamental, and the two branches of Buddhism will soon unite to contribute to the promotion of peace and good will towards all beings.

C. CECIL CHURCH.

Emerson The Nihilist. CHARLES GREY SHAW. The International Journal of Ethics, Vol. XXV, 1, pp. 68–86.

Emerson may be called an idealistic nihilist. His ideals are similar to those which later characterize Bandelaire, Wagner, Stirner and Ibsen. He is anarchistic, immoralistic, irreligious. With Poe, the irrationalist, and Emerson, the immoralist, as foci of American culture we must surmount the current scientism and sociality to a higher spiritual life. The necessity is lacking to go to Wagner and Ibsen, to Stirner, to Turgénieff and Dostoievsky and Gogel, to Beyle, to Nietzsche. Emerson before all these emancipated the ego. He pictures society as a conspiracy against the ego, as an enemy of that foundation of spiritual life, the "I am that I am." The development of the individual is the divine necessity. Evolution of society can be but fleeting or fragmentary. A non-conformist, he knows not duty. Benevolence, with the other virtues, should be a spiritual spontaneity. A world of Emerson's would need no law. "To educate the wise man the state exists, and with the appearance of the wise man the state expires." Law is limitation; and limitation, man's only sin. His nominalism resists the synthesis which tends to make man pliable and stuff-like. Indifference—not efficiency—is the Emersonian apex. In Emerson's hypernomian morality we have the original form of Nietzschean "Beyond Good and Evil." As Ibsen delights in his 'heights,' so Emerson, in his 'Beyond.' Here there is no social conscience. The individual is the 'blond beast,' strong in his blue-eyedness. With Rousseau, he finds his historical premises in nature. With Schiller, he is a pagan child of the naïve, who knows no distinctions of inner and outer.

His wild individualism is indeed a life, and not an 'expiation.' "No law can be sacred to me but that of my own nature." Since Darwin we have been inundated with a pale sociality that needs the innoculation of Transcendentalism. Emerson's inner life was filled with a joyous self-reliant irreligion. "If I am the Devil's child," he says, "I will live then from the Devil." Emerson's strong individualism does not disown his debt to vice. He prefers to be classed among the goats rather than among the sheep. If our Anglo-American pragmatists did not lack the will to view their neat doctrine in the strong light of irrationalism and immoralism, they could claim Emerson as a prophet of their cult. He desires that "the universe be kept open in all directions," and that Jesus be not allowed to "absorb the race." There is a hint of dilettantism in Emerson. His anarchy, immoralism, and irreligion were perhaps merely intellectual. They seem not to have been the result of such spiritual storms as were hardly weathered by Ibsen and Strindberg. Swedenborgianism held for Emerson, as for the late Professor James, a secret stairway to the heights of spiritual life where is lost some of the seriousness of man's prayers and man's religion.

A. J. THOMAS.

The Function and Scope of Social Philosophy. HARRY ALLEN OVERSTREET. J. of Ph., Psy., and Sci. Meth., XI, 20, pp. 533–543.

Modern philosophy in its regnant aspect has been an exceedingly one-sided affair, confining its function to the critical examination of the concepts employed by the mathematico-natural sciences. A new direction is now imminent. Philosophy must be the comprehensive critique of the concepts of all social sciences. The task of social philosophy is, first, to examine the intended scope of the concepts employed by a particular science; second, to determine whether or not in the elaboration of these concepts that science passes unconsciously beyond the intended scope; and, third, to find out what relation the special meanings assigned bear to the meanings which these concepts yield when they are regarded from a point of view which is thoroughly comprehensive. The organization of these social concepts is one which the social philosopher must himself effect. His first task is to make an inventory of the master concepts of the social sciences and to arrange them in some manner of organic relationship. Tentatively speaking, these master concepts are (1) work, (2) sex-life, (3) æsthetic enjoyment, (4) knowledge, (5) government, and (6) the good. A social philosophy, then, properly begins as a philosophy of economics, and proceeds to the elaboration of philosophies of sex-life, of æsthetics, of science and education, of law and government, and, finally, of ethics and religion.

SUH HU.

On the Psychology of Poetic Construction. An Experimental Method. RADOSLAV A. TSANOFF. Am. J. Ps., XXV, 4, pp. 588–537.

The imagination is practically virgin soil for experiment. It has been treated (1) as a mystical or inexplicable faculty; (2) by earlier psychologists

as occupying a formal place within a system; (3) by modern psychologists variously as a manifestation of each and every mental process. The image of imagination has been experimentally compared with that of memory, and with perception, but such a study should include not only the image material, but especially the peculiar process of poetic construction. A study of the introspections of mediocre people upon the appreciation or writing of poetry would leave us still suspecting a distinctive process in the case of great poets. This process certainly cannot be discovered in casual anecdotes concerning their eccentricities. The study of their self-revelations, of questionnaires submitted to them, or of the 'Boswellizing' of an individual poet would be valuable; but the introspection of poets tends to vagueness or to inaccuracy, and particularly to a paralysis of the essential spontaneity of poetic imagination. Therefore the study of the poet's 'first draft' would seem to offer the best experimental record of the imagination, since it would show in detail the succession of images and the development of the idea. First drafts are difficult to find and to decipher, and would tend to be of particular rather than of general significance. But the author's study of a few first drafts justifies his hope that other similar studies will be made.

MARION D. CRANE.

Values and Experience. J. F. DASHIELL. J. of Ph., Psy., and Sci. Meth., XI, 8, pp. 491–497.

Naïve human experience is an unmistakable but not a mere dynamism, for the agencies operative therein stand over against us brimful of meaning, *i. e.*, of value aspects. This ever-changing world of life tends to form itself into vortices, which are continually becoming organized in relation to each other. We, as a set of these organisms, make a distinction relative to purpose and activity, and regard the rest as extra-organic. Thus we find values. In so far, then, as a content is experienced it has value. Here 'value' is a primary category, which does not lose uniqueness when it is organized into organic and extra-organic. An arbitrary distinction drawn between values and things, between original data and what is precipitated out from them as 'things,' would utilize the dead concept of substance, which represents the dynamic as static. The distinction between subjective and objective follows that between the organic and extra-organic, but the whole real value is neither subjective nor objective, but simple and immediate.

MARION D. CRANE.

NOTES.

The fourteenth annual meeting of the American Philosophical Association was held at Chicago, December 28–30, in conjunction with the meeting of the Western Philosophical Association. The president of the Association, Professor J. F. Tufts, delivered an address on The Ethics of States. This with the Report of the meeting will appear in the March number of the REVIEW.

The Fifth International Congress of Philosophy, which was to have been held in London during the first week of September, 1915, has been indefinitely postponed because of the war.

Professor Roscoe Pound will in April deliver a course of lectures at Cornell University on "Modern Justice."

We give below a list of articles in current philosophical magazines:

MIND, 92: *G. T. Ladd*, A Defence of Idealism; *E. H. Strange*, Objectives, Truth and Error; *W. W. Carlisle*, Intercourse as the Basis of Thought; *B. Muscio*, The Hegelian Dialectic.

THE MONIST, XXIV, 4: *Richard Garbe*, Buddhist Influence in the Gospels; *A. S. White*, Unity of World-conception; *Philip E. B. Jourdain*, The Principles of Mechanics with Newton from 1679 to 1687; *D. T. Suzuki*, The Development of Mahayana Buddhism; *Bertrand Russell*, Definitions and Methodological Principles in Theory of Knowledge.

HARVARD THEOLOGICAL REVIEW, VII, 4: *Francis G. Peabody*, Mysticism and Modern Life; *Warner Fite*, The Motive of Individualism in Religion; *Robert A. Woods*, Drunkenness; *Edward S. Drown*, The Growth of the Incarnation; *William Lawrence*, Pensions for the Clergy; *Benjamin B. Warfield*, The Essence of Christianity and the Cross of Christ.

THE INTERNATIONAL JOURNAL OF ETHICS, XXV, 1: *Roscoe Pound*, A Feudal Principle in Modern Law; *John Dewey*, Nature and Reason in Law; *H. O. Meredith*, Class Distinctions; *Ellsworth Faris*, Origin of Punishment; *C. G. Shaw*, Emerson the Nihilist; *E. S. P. Haynes*, Divorce and Morality.

THE AMERICAN JOURNAL OF PSYCHOLOGY, XXV, 4: *Robert MacDougall*, The Distribution of Consciousness and its Criteria; *Leonard A. Troland*, Adaptation and the Chemical Theory of Sensory Response; *Radoslav A. Tsanoff*, On the Psychology of Poetic Construction; *S. W. Fernberger*, The Effect of the Attitude of the Subject upon the Measure of Sensitivity; *Samuel C. Kohs*, The Association Method in its Relation to the Complex and Complex Indicators.

THE PSYCHOLOGICAL BULLETIN, XI, 10: *H. T. Woolley*, The Psychology of Sex; *H. C. McComas*, The Heredity of Mental Abilities; *F. G. Bruner*, Racial Differences.

XI, 11: *W. Brown*, Recent Literature of Mental Types; *S. Smith*, Right and Left Handedness; *R. S. Woodworth*, Voluntary Phenomena-Experimental; *F. L. Wells*, Dynamic Psychology; *V. A. C. Henman*, Reaction Time; *E. K. Strong*, Fatigue, Work, and Inhibition; *A. T. Poffenberger*, Psychological Effects of Drugs; *W. V. Bingham*, Five Years of Progress of Comparative Musical Science.

THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY, AND SCIENTIFIC METHODS, XI, 21: *Norbert Wiener*, Relativism; *Edith F. Mulhall*, Experiments in Judgment.

XI, 22: *C. I. Lewis*, The Matrix Algebra for Implications; *H. G. Hartmann*, Are Realism and Relativity Incompatible?

XI, 23: *Morris R. Cohen*, Qualities, Relations, and Things; *W. P. Montague*, Professor Thorndike's Attack on the Ideo-Motor Theory; *L. W. Kline*, An Experimental Study for Classes in Reasoning and its Transference.

XI, 24: *Edgar A. Singer, Jr.*, The Pulse of Life; *H. G. Hartmann*, A Definition of Causation; A Reply to Professor Sheldon.

THE BRITISH JOURNAL OF PSYCHOLOGY, VII, 2: *T. H. Pear*, The Role of Repression in Forgetting; *Carveth Read*, The Psychology of Magic; *W. H. Winch*, Mental Examination of School Children; *M. J. Reaney*, General Intelligence and Play Ability; *N. L. Perkins*, Value of Distributed Repetitions in Rote Learning.

VII, 3: *Agnes L. Rogers and J. L. McIntyre*, The Measurement of Intelligence in Children by the Binet-Simon Scale; *E. Roffe Thomson*, An Inquiry into some Questions connected with Imagery in Dreams; *Stanley H. Watkins*, Immediate Memory and its Evaluation; *J. C. Flügel and Wm. McDougall*, Some Observations on Psychological Contrast.

THE PSYCHOLOGICAL REVIEW, XXI, 5: *S. W. Fernberger*, On the Elimination of the Two Extreme Intensities of the Comparison Stimuli in the Method of Constant Stimuli; *Robert A. Cummins*, A Study of the Effect of Basket Ball Practice on Motor Reaction, Attention and Suggestibility; *Jean Weidensall*, Psychological Tests as Applied to Criminal Women; *M. F. Washburn*, The Function of Incipient Motor Processes.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE, XXXVIII, 3: *Friedrich Dittmann*, Die Geschichtsphilosophie Comtes und Hegels: Ein Vergleich; *Albert Kranold*, Methodologische Betrachtungen zum Problem der sozialen Fehlurteile; *Richard Müller-Freienfels*, Die Bedeutung der motorischen Faktoren und der Gefühle für Wahrnehmung, Aufmerksamkeit und Urteil. II.; *Viktor Stern*, Die logischen Mängel der Machschen Antimetaphysik und die realistische Ergänzung seiner Positivismus.

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE, XX, 3: *Dr. Bernhard von Ludwig*, Philosophischer Realismus; *Bernhard Rawitz*, Über das Vergessen; *Johannes Schlaf*, Geozentrischer Bestand und Himmelsmechanik; *Georg Wendel*, Der Freie Wille und seine Bedeutung in der Erfahrung; *Hans Prager*, Über die erkenntnistheoretischen und metaphysischen Grundlagen der Rechts-philosophie; *Arthur Trebitsch*, Die Causalität im Lichte des "Denktriebes zur Einheit"; *Dr. Ernst Müller*, Vom Sinn des Widersinns.

ZEITSCHRIFT FÜR PSYCHOLOGIE, LXIX, 3 u. 4: *Gustav Rose*, Experimentelle Untersuchungen über das topische Gedächtnis; *Paul V. Liebermann und Géza Révész*, Die Binaurale Tonmischung; *Vittorio Benussi*, Die Gestaltwahrnehmung.

LXX, 1 u. 2: *Karl Reichardt*, Über den Vergleich erinnerte Objecte, insbesondere hinsichtlicht ihrer Grosse; *L. Edinger*, Zur Methodik in der Tierpsychologie; *Anathon Aall*, Der Traum.

ARCHIVES DE PSYCHOLOGIE, XIV, 55: *J. Kollarits*, Observations de psychologie quotidienne; *J. Kollarits*, Contributions à l'étude des rêves; *R. de Saussure*, Le temps en général et le temps Bergsonien en particulier.